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LIGHT, HEAT, WATER-SUPPLY, AND SEWERAGE.

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SUBWAYS FOR GAS AND WATER-MAINS.

At a recent meeting of the Metropolitan Board of Works of London, a deputation from the different metropolitan gas companies attended, to present a memorial on the subject of laying gas-mains in subways, &c.

The memorial stated that subways were not suitable for gas-mains; for if gas were mixed with common air it became explosive, and in confined and limited places was exceedingly dangerous. It was impossible to prevent the escape of gas (?) by reason of the rapid decay of pipes; and as all works in subways would have to be performed by artificial light, escapes of gas would be subject to almost immediate explosion. The memorial went on to say that frequent connections with mains had to be made, but in a dark and confined space that would be at all times difficult and dangerous, and in cases in which large mains are to be connected, quite impracticable; as such work could not be performed by artificial light, and without more fresh air than could be obtained in any confined space. While admitting the usefulness of subways, they hoped the board would protect the public and the gas-companies from danger to life and property by exempting gas-mains from the subways bill.

The chairman said the board had not rushed into this subject without the fullest inquiry, for they offered premiums for the best designs for a subway, and those designs were referred to a committee, among whom were the late Mr. Robert Stephenson, Mr. Hawksley, Mr. Wyatt, Mr. W. Cubitt, the late Mr. Alexander Wright, Mr. Bazalgette, and Mr. Marrable, and they gave the fullest consideration to the subject. They believed that they should be able to prevent the escape of gas. The board would do their best to improve the subways, so as to avoid any of the evils which had been referred to.

The memorial was referred to the street committee for consideration and report.—*Builder.*

[If all the New York opposition gas companies, which have been recently chartered, build works and lay their mains, subways will be necessary in this city.—ED.]

PETROLEUM A CIVILIZER.

The Montreal *Witness* has the following remarks on the civilizing and elevating tendencies of petroleum. These remarks are very true, but if it can be said with regard to petroleum oils, with how much more emphasis may the same reflections be made respecting the elevating tendencies of coal-gas:

The civilizing and elevating tendencies of this comparatively new article of domestic use must be very great. Formerly, the only good artificial light was gas, and that was necessarily confined to cities. Now, an equally brilliant light may be had, and is had in every village, and farm-house, and cottage, throughout the country. Formerly, candles were continually "running," requiring "snuffing," and endangering, by their unguarded flame, curtains, or any inflammable material near them; whilst, at the best, they only served to render darkness visible. Or, if animal or vegetable oils were used in lamps, they were continually clogging up and in need of cleaning,—a very troublesome and filthy process; the wick required trimming; and the oil stained everything it touched. Now, the coal-oil, as refined petroleum is commonly called, stains nothing; the lamps require little or no cleaning; the wick needs trimming only once a day, and scarcely that; the flame is guarded by a chimney; and last, not least, the expense for the same amount of light is not one-fourth, perhaps not one-tenth, of what it used to be. Formerly, in Lower Canada, it was no uncommon thing for the women of two or three houses to gather into one to sew by the light of a single candle. Now, each house can have for the same expense a light exceeding half a dozen candles. Formerly, reading at night was a costly amusement, and many a youth had to injure his eyes by poring over his small-print books by the light of the fire, whilst the greater part of the poor people did not read at all. Now there is no hindrance to reading or study in the family. The saving in eyesight among seamstresses and readers must, indeed, be very great, whilst their labors are much easier. The increase, therefore, of comfort, cheerfulness, intelligence, and usefulness, in consequence of the use of coal-oil amongst the masses of the people, and especially in country places, where gas cannot be had, must be very great indeed.

THE NEW LIGHT.

Many can remember, in country cottages and in the houses of poorer people in towns, the general use of a small and dismal lamp, with sometimes a cotton wick, and at others a piece of dried rush, fed in certain cases by coarse and by no means sweet-smelling whale-oil, and in others by grease. These were the lights by which women worked at their stocking-knitting or twirled the spinning wheel; while the men and youths would beguile their winter evenings in vacancy around the fire-place: books were then scarce, and reading not much cared for by persons of this class. Artificial lighting in such cases was not much better than that in use amongst the Esquimaux. Even street-lamps were at one time supplied with whale-oil, and most of the shops were lighted, at best, by dipped or moulded tallow candles, some of which were hung in a kind of chandalier form. Those tradesmen, however, who wished to outblaze their neighbors, introduced lamps of a superior kind in which was used seal or sperm oil. Engravers, and those who were engaged in the execution of fine work, used lights of this description. The cost of wax candles in the houses of the gentry at that time was very great: the price of sperm, seal, and whale oils, in consequence of increased demand, and the scarcity of whales, rose to a high figure; but the price of tallow candles became more reasonable, and gas at length suddenly shed a splendor into the streets.

Of late, in provincial towns, and even in some villages, gas-lights have been introduced into the dwellings of the working classes,—a practice which adds to the cheerfulness of homes, and is not more expensive than candles. In Manchester, most new houses, of even the third class, have gas-pipes laid on at the time of building. In London this is not so generally done even in new houses of this class; and to lay the pipes to old ones, by re-opening the pavements, is a seldom recurring art.

Of late, however, lamps constructed for the use of paraffine or patroleum and Colza oils are coming much into use in the houses of the working clases; and it is stated that in the longest days of winter, when light is needed from between four and five o'clock P. M. till between ten and eleven, and also in the morning, the cost is only about eightpence a week; common candles would come to about a shilling; while the paraffine gives three or four times the volume of light that could be obtained from candles for that money. The advantage, however, is to a certain extent counterbalanced by the danger which attends the use of this material. We hear of constant accidents from its introduction; and we fear that without some carefully considered regulations respecting its sale, the number of fires will be permanently increased from this cause. That there are two kinds of so-called paraffine oil, however, in the market, one of which is by no means dangerous, some traders seem to know, while others are either ignorant or reckless; and it is certain that the very dangerous paraffine is often sold under a warranty that it is a safe; by which means many poor women and children are burnt, houses destroyed, and other mischief is done. No doubt persons who are in this way guilty could be forced to pay damages; but something more than this is needed for the protection of the public.—*London Builder.*

NATURAL GAS IN PENNSYLVANIA.

Near Erie, Pa., is an oil-well, known as the "Althoff Well," which has been patiently worked at for two years, in the hopes of its yielding oil in such quantities as to be remunerative. The *Erie City Gazette*, referring to this subject says:

At one time five of the operatives and stock owners were so terribly burnt as to be confined to their beds for some months. At the same time, the tools got fast four hundred feet below the surface, and were declared by experienced drillers to be irrecoverable. Yet these and other difficulties did not deter them. They are now over six hundred feet deep, and have obtained only about two barrels of such oil as is often found in the crevices of rocks at some distance from the main supply, and which is driven forward by the gas, or else brought up by the capillary attraction of the rocks. But should they never succeed in getting a good oil-well, a continuance of the present flow of gas would pay them well. They get upwards of twenty thousand feet of perfectly pure gas per day.

That this gas comes from a great reservoir of such oil as is found in Pennsylvania, there can be no reasonable doubt. It is a perfectly pure carburetted hydrogen, having no free carbon, and, consequently, gives not a particle of soot. When in a state of combustion, the carbon unites with oxygen of the air and forms carbonic acid, while the hydrogen unites also with oxygen of the air and forms water. Carbonic acid and water are always the only resultants of a perfectly pure gas or burning fluid. It is not so with gas manufactured from coal. In the destructive distillation of coal, several compounds are formed which are difficult of removal; and the present price charged would not enable the manufacturer to entirely remove them. When the purification of coal-gas is not carefully attended to, the sulphuretted hydrogen formed in the retort comes to the burners, and when ignited, at once forms sulphurous and sulphuric acids, which are injurious to everything upon which they fall.

From the above facts, it is clear that the pure and inodorous natural gas of this well is preferable to coal-gas for domestic use, and where people assemble within doors with insufficient ventilation.

GAS-LIGHT IN STEAMBOATS.—The steamboats on the North River, known as belonging to the People's Line, are all to be lighted with gas. Some of the boats have already had the gas introduced, and the success of the innovation has been so marked that the other boats are all to have gas-holders put on board, so that they will be in readiness for the ensuing season. The boats take their supply of gas at Albany, which serves them for the round trip.

GAS-LIGHT COMPANIES IN THE UNITED STATES.

Compiled from official sources expressly for the AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. Per Sh. $	Semi-Ann'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1857	ADRIAN	Mich.	50,000	50	—	May & November.	4,000	3 50	....	....	
1856	AKRON	O.	20 000	33⅓	—	Do.	3,500	3 00	....	....	
1845	ALBANY	N. Y.	25 , 00	20	4	January & July.	65,000	3 00	120	....	None in market.
1858	ALBION	N. Y.	30,000	100	—	Do.	3,000	3 80	....	....	
1851	ALEXANDRIA	Va.	106,530	—	—	City Works.	9,000	3 50	....	....	
1852	ALLEGHANY	Pa.	200.000	25	4	May & November.	25,000	3 00	....	....	
1858	ALLENTOWN	Pa.	60,000	100	3½	Do.	5,000	3 50	....	....	
1857	ALTON	Ill.	75,000	—	—	Private Works.	4,000	3 50	....	....	
1859	ALTOONA	Pa.	40,000	20	4	January & July.	5,000	3 00	....	....	
1850	AMESBURY AND SALISBURY	Mass.	30,000	25	—	Do.	7,000	4 00	....	....	
1858	ANNAPOLIS	Md.	100,000	25	—	Do.	4,000	4 00	....	....	
1858	ANN ARBOR	Mich.	23,000	50	5	March & September.	5,500	4 00	....	....	
1858	ASTORIA	N. Y.	20,000	50	—	Do.	6,000	4 00	....	....	
1855	ATLANTA	Ga.	150,000	25	5	January & July.	12,000	5 00	....	....	
1857	ATTLEBORO'	Mass.	6,000	50	3	Do.	2,000	6 00	....	....	
1850	AUBURN	N. Y.	80,000	50	5	Do	10,000	7 00	....	....	
1851	AUGUSTA	Ga.	80,000	25	8	Do.	9,000	6 00	....	....	
1838	AUGUSTA AND HALLOWELL	Me.	84,700	50	5	Do.	10,000	4 00	....	...	
1860	AURORA	Ind.	10,000	—	—	Private Works.	3 500	3 50	....	...	Formerly used Sanders' Water-Gas. Recently altered to Coal Gas-Works.
1817	BALTIMORE	Md.	550,000	100	5	June & December.	150,000	2 50	150	....	None for sale.
1852	BANGOR	Me.	120,000	100	2½	January & July.	12,000	3 00	100	....	
1855	BATAVIA	N. Y.	32,000	20	4	Do.	2,500	4 00	100	100	Stock firm. Good works and well managed.
1853	BATH	Me.	65,000	100	3	April & October.	10,000	3 75	...	...	
1859	BATH	N. Y.	15,000	50	—	May & November.	3,000	7 00	....	....	
1861	BATTLE CREEK	Mich.	15,000	—	—	January & July.			....	....	
1858	BELFAST	Me.	14,000	100	—	Do.	7,000	7 00	....	....	
1856	BELLEFONT	Pa.	20,000	25	2	Do.	3,500	4 00	....	....	
	BELOIT	Wis.	30,000	—	—	Do.	4,000	4 00	....	....	
1854	BETHLEHEM	Pa.	50,000	50	4	June & December.	2,000	3 20	...	....	
1859	BEVERLY	Mass.	40,000	100	—	January & July.	4,000	4 00	....	....	
1853	BINGHAMPTON	N. Y.	50,000	50	3½	Do.	10 000	4 00	....	....	
1859	BIRMINGHAM	Pa.	40,000	50	—	Do.	4,000	4 00	....	....	
1855	BLOOMINGTON	Ill.	40,000	50	—	Do.	6 000	4 00	....	....	
1853	BORDENTOWN	N. J.	50,000	25	3	June & December.	4,000	3 80	....	....	
1822	BOSTON	Mass.	1,000,000	500	5	Do.	130,000	2 25	....	....	
1859	BRATTLEBORO'	Vt.	21 000	—	—	Do.	3,000	4 00	....	....	
1851	BRIDGEPORT	Ct.	90,000	25	4	January & July.	10,000	4 00	90	....	Passed last dividend.
1857	BRIDGETON	N. J.	50,000	20	—	Do.	5,000	4 00	....	....	
1856	BRISTOL	Pa.	30,000	25	3	February & August.	3.000	4 00	....	....	
1855	BRISTOL	R. I.	35.000	50	2	January & July.	6.000	4 00	....	....	
1859	BROCKPORT	N. Y.	25.000	100	3	Do.	1.500	4 00	....	....	
1853	BROOKLINE	Mass.	66,000	100	3½	February & August.	3.500	3 50	....	....	
1825	BROOKLYN	N. Y.	2,000,000	25	5	January & July.	75,000	2 50	170	160	
	BROWNSVILLE	Pa.				Do.			....	....	
1848	BUFFALO	N. Y.	600,000	50	5	Do.	70,000	2 90	140	125	
1852	BURLINGTON	N. J.	100.000	25	3½	Do.	5.000	4 00	105	....	
1858	BURLINGTON	Vt.	75,000	25	2½	Do.	10,000	4 50	....	....	
1859	BURLINGTON	Iowa.	65,000	50	—	Do.	8,000	4 00	....	....	
1861	CALAIS	Me.	90,000	100	—	Do.	10,000	3 50	....	...	
1852	CAMBRIDGE	Mass.	800,000	100	5	February & August.	20.000	3 50	100	97½	
1852	CAMDEN	N. J.	800,000	100	3	April & October.	15,000	3 85	105	100	
1858	CANANDAIGUA	N. Y.	50,000	50	—	January & July.	3,000	4 00	90	80	
1856	CANTON	O.	19,000	50	6	March & September.	6,000	3 00	....	....	
1858	CAPE ISLAND	N. J.	80,000	100	—	October.	10,000	6 00	....	...	Watering place.—These Works only run in summer.
1860	CARBONDALE	Pa.	16,000	25	—	March & September.	5,000	4 00	....	....	
1855	CARLISLE	Pa.	80,000	25	—	January & July.	4,000	4 00	...	...	
1856	CATASAUQUA	Pa.	15,000	25	5	May & November.	2,000	4 00	....	....	
1858	CATSKILL	N. Y.		—	—	Private Works.	3 000	3 00	....	....	Owned by G. T. Sutton.
1857	CHAMBERSBURG	Pa.	30,000	25	—	January & July.	3,000	4 00	....	....	
1846	CHARLESTON	S. C.	723,800	25	4	Do.	50,000	4 00	....	....	
1851	CHARLESTOWN	Mass.	200,000	50	4	Do.	30,000	3 00	....	....	
1858	CHARLOTTE	N. C.	14.000	50	10	March & September.	3,500	6 00	....	....	
1859	CHARLOTTEVILLE	Vt.	15,000	25	—	Do.	4,000	4 50	....	...	
1851	CHELSEA	Mass.	100.000	100	3½	January & July.	8,000	3 50	....	....	
1856	CHESTER	Pa.	25,000	25	3	April & October.	4,000	4 00	....	....	
1849	CHICAGO	Ill.	1,300,000	25	5	January & July.	100,000	2 50	150	140	Very scarce. Stock wanted.
1857	CHICOPEE	Mass.	50,000	20	—	Do.		4 00	....	....	
1851	CHILLICOTHE	O.	40,000	25	4	Do.	12,000	3 50	....	....	
1841	CINCINNATI	O.	1,600,000	100	5	Do.	225,000	2 50	....	....	
1859	CITIZENS', BROOKLYN	N. Y.	1,000,000	20	—	Do.	135,000	3 00	128	125	
1860	CITIZENS', READING	Mass.	90,000	100	—				....	....	
	CLARKESVILLE	Tenn.	100.000	50	—	Do.	5,000	4 00	....	....	
1860	CLAREMONT	N. H.	20 000	100	—	March & September.	3,000	4 00	....	....	
1846	CLEVELAND	O.	200,000	10	5	January & July.	20.000	3 00	....	....	
1858	CLINTON	Mass.	30,000	500	5	Do.	3,000	4 00	....	...	
1859	CLYDE	N. Y.	10,000	50	4	Do.	2,500	4 00	...	....	
1854	COHOES	N. Y.	50,000	20	3½	April & October.	5,000	3 60	....	....	Formerly Rosin-Gas, but now Coal. A well managed company. Stock firmly held.
1860	COLD SPRING	N. Y.	30,000	50	—	Do.	3,500	4 00	95	....	
1860	COLD WATER	Mich.	25,000	50	5	January & July.	4,000	4 60	....	....	
1852	COLUMBIA	Pa.	37,500	25	—	Do.	4,000	3 50	....	....	
1852	COLUMBIA	S. C.	44,000	25	4	Do.	6,000	6 00	...	....	
1857	COLUMBIA	Cal.	50,000	25	—	Do.	4,500	10 00	....	....	
1858	COLUMBUS	Ga.	54,000	25	5	Do.	5,000	7 00	....	....	
1850	COLUMBUS	O.	100,000	10	6	Do.	30.000	3 00	....	....	
1858	CONCORD	N. H.	50 000	50	5	Do.	8,000	3 50	....	....	
1858	COVINGTON AND NEWPORT	Ky.	100,000	50	3½	Do.	28.000	4 00	...	....	
1854	CUMBERLAND	Md.	60,000	50	3	Do.	6,000	4 00	....	....	
1857	DANBURY	Ct.	50,000	25	4	Do.	2,000	3 75	....	...	
1856	DANVILLE	Pa.	30,000	25	—	June & December.	3 000	4 00	....	....	
1855	DAVENPORT	Iowa.	56,000	100	—	Do.	6,000	5 00	....	....	
1848	DAYTON	O.	50,000	25	5	February & August.	8,000	3 50	....	.. .	
1853	DEDHAM	Mass.	40 000	50	—	January & July.	3,000	4 00	....	....	
1860	DELAWARE	O.	30,000	25	—	Do.	2,500	3 00	....	....	
1849	DETROIT	Mich.	500,000	50	5	Do.	30,000	3 50	160	150	Excellent Stock. No sales.
1860	DOBBS' FERRY	N. Y.	25,000	—	—	Do.	3,000	4 00	....	....	
1854	DORCHESTER	Mass.	150,000	100	—	Do.	14,000	4 00	....	....	
1839	DOVER	Del.	12,000	—	—	Private Works.	2,000	4 00	....	....	
	DOVER	N. H.				January & July.			....	....	
1857	DOYLESTOWN	Pa.	50,000	—	—	Do.	3,000	4 00	....	....	
1854	DUBUQUE	Iowa.	50,000	115	3½	Do.	17,000	4 50	....	115	This stock is wanted at par.
1853	EAST BOSTON	Mass.	133,000	25	4	Do.	20,000	3 50	....	145	
1858	EAST GREENWICH	R. I.	11,200	100	15	Do.	3,000	7 00	....	...	No transactions.
1861	EAST HAMPTON	Mass.	10,000	25	—	Do.	5,000	9 00	....	....	
1861	EAST NEW YORK	N. Y.	50,000	50	—	Do.	12,000	3 50	....	....	
1857	EASTON	Md.	9,000	10	—	Do.	1,500	7 00	....	....	
1850	EASTON	Pa.	125,000	50	4	June & December.	6,000	3 60	....	....	
1856	EASTPORT	Me.	50,000	55	—	Do.	3,000	4 00	....	....	
1855	ELIZABETH	N. J.	100,000	20	4	January & July.	14,000	3 50	....	....	
	ELLICOTT'S MILLS	Md.	10,000	—	—	Do.	4,000	4 00	....	....	
1859	ELMIRA	N. Y.	50,000	25	3½	Do.	5,000	4 00	....	...	
1852	ERIE	Pa.	68.000	50	3½	June & December.	10 000	3 00	....	....	
1853	EVANSVILLE	Ind.	60,000	50	4	January & July.	12.000	4 00	110	....	
	EXETER	N. H.	60,000	—	—	Do.	12,000		.. ..	...	A very good Company.
	FAIR HAVEN	Ct.	20,000	25		Do.	8,000	4 00	....	....	
1847	FALL RIVER	Mass.	26,000	—	—	Private Works.	12,000	3 50	....	....	
1859	FAYETTEVILLE	N. C.	25,000	100	6	January & July.	7,000	6 00	....	....	
	FIFTH WARD (Milwaukee)	Wis.	50,000	25	—	Do.	10,000	4 00	....	....	
1857	FISHKILL	N Y.	10,000	20	—	April & October.	1,500	9 00	....	....	
1853	FITCHBURG	Mass.	100,000	50	3	January & July.	5,000	4 00	....	....	Make Petroleum-Gas.
1859	FLEMINGTON	N J.	20,000	—	—	Do.	3,000	4 00	....	....	
1855	FLUSHING	N. Y.	20,000	50	1½	March & September.	6,500	4 00	...	....	
1858	FOLSOM	Cal.								....	
	FORT WAYNE	Ind.	40.000	25	—	Do.	6.000	4 00	...	...	
1851	FRANKFORT	Ky.	50.000	—	—	City Works.	5.500	4 50	...	....	
1851	FREDERICK CITY	Md.	36,000	100	—	January & July.	5,000	6 70	....	....	
1854	FREDERICKSBURG	Va.	72,500	50	5	Do.	4,500	4 00	....	....	
1858	FREDONIA (Natural Gas)	N. Y.	10.000	100	—	Do.	2,000	4 00	....	....	Unlimited supply of Natural Gas.
1856	FREEPORT	Ill.	20,000	100	—	May & November.	10,000	4 00	....	....	

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When Chartered.	Town.	State.	Chartered Capital.	Par Val. Per Sh. $	Semi-Ann'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1859	Fremont	O.	25,000	25	—	May & November.	2,000	4 50	....	....	
1858	Fulton	N. Y.	12,000	100	—	Do.	4,000	7 00	....	....	
1855	Galena	Ill.	70,000	100	—	Do.	8,000	4 00	....	....	
1859	Galion	O.	25,000	25	—	January & July.	1,800	3 00	....	....	
1858	Galveston	Texas.	150,000	50	—	May & November.	7,000	6 00	....	....	
1854	Gardiner	Me.	100,000	50	4	Do.	8,000	4 00	....	....	
1853	Geneva	N. Y.	75,000	25	2½	Do.	6,000	4 00	....	....	
1851	Germantown	Pa.	Merged	into	the	Philadelphia Works.	12,000	2 25	....	....	
1859	Gettysburg	Pa.	20,000	50	3	January & July.	2,500	4 00	....	....	
1854	Glen's Falls	N. Y.	35,000	50	3	February & August.	4,000	4 00	....	....	
1854	Gloucester	Mass.	40,000	50	—	January & July.	5,000	3 50	....	....	
1857	Gloversville	N. Y.	15,000	25	—	Do.	3,000	3 50	....	....	
1858	Grand Rapids	Mich.	50,000	20	—	Do.	3,000	4 00	....	....	
1855	Great Barrington	Mass.	5,000	100	5	April & October.	2,000	7 00	....	....	
1849	Great Falls	N. H.	50,000	100	3	Do.	3,000	4 00	....	....	
1860	Greenfield	Mass.	20,000	50	2	January & July.	2,500	4 00	....	....	Close corporation.
1853	Greenpoint	N. Y.	100,000	50	5	Do.	20,000	3 00	....	....	
1859	Greensboro'	N. C.	12,000	50	—	April & October.	3,000	7 00	....	....	
1858	Greensburg	Pa.	30,000	25	3	May & November.	2,000	3 00	....	....	
1854	Hagerstown	Md.	15,000	20	—	January & July.	2,000	6 00	....½	....	
	Hamilton	O.	15,000			Do.			....	....	
1859	Hannibal	Mo.	100,000	100	—	Do.	6,000	3 50	....	....	
1857	Harlem	N. Y.	350,000	50	3½	Do.	25,000	3 00	....	145	
1855	Harrisburg	Pa.	100,000	—	4	Do.	5,000	4 00	....	....	
1849	Hartford	Ct.	200,000	25	4	Do.	25,000	3 00	150	140	Stock in demand.
	Hastings	N. Y.				Do.	8,000	4 00	....	....	
1853	Haverhill	Mass.	50,000	50	—	Do.	5,000	4 00	....	....	
1859	Haverstraw	N. Y.	20,000	100	—	Do.	5,000	4 00	....	....	
1861	Hayesville	Mass.	15,000	25		Do.	4,000	4 00	....	....	
1859	Hempstead	N. Y.	16,000	25	—	Do.	1,000	4 00	....	....	
1862	Hoboken	N. J.	100,000	25	3	Do.	30,000	2 50	....	100	Works not yet built.
1856	Hollidaysburg	Pa.	30,000	25	2	Do.	4,000	3 50	....	....	
1861	Holyoke	Mass.	20,000	25	—	Do.	3,000	4 00	....	....	
1861	Homer & Cortlandt	N. Y.	40,000	100	—	Do.	6,000	4 00	....	....	
1854	Honesdale	Pa.	30,000	25	3	Do.	2,500	4 00	....	....	
1860	Hornellsville	N. Y.	12,000	50	—	Do.	2,000	4 00	....	....	
1853	Hudson	N. Y.	50,000	100	3½	February & August.	3,000	4 00	....	....	
	Hunter's Point	N. Y.									
1857	Huntington	Pa.	18,000	50	3	Do.	2,000	3 50	....	....	
1856	Huntsville	Ala.	7,325	25	—	June & December.	2,000	5 00	....	....	
	Indianapolis	Ind.	150,000	—	—	Do.	15,000	5 00	....	....	
1857	Iowa City	Iowa.	40,000	50	—	February & August.	4,000	4 50	....	....	
1852	Ithaca	N. Y.	75,000	25	3½	January & July.	6,000	4 00	....	....	
1857	Jackson	Mich.	25,000	50	5	Do.	6,000	3 50	....	....	
	Jackson	Miss.	80,000	50	—	Do.	4,000	4 50	....	....	
	Jackson	Cal.	50,000	30	—	Do.	4,000	10 00	....	....	
	Jacksonville	Flor.	30,000	20	—	Do.	2,000	7 00	....	....	
	Jacksonville	Ind.	50,000	50	—	Do.	4,000	5 00	....	....	
1858	Jacksonville	Mo.	25,000	25	—	Do.	7,000	6 00	....	....	
1856	Jamaica	N. Y.	20,000	—	4	Do.	6,000	4 00	....	....	
1858	Jamaica Plain	Mass.	75,000	100	3½	Do.	3,000	3 50	....	....	
	Jamestown	N. Y.	25,000	—	—	Do.	4,000	4 00	....	....	
1856	Janesville	Wis.	50,000	100	—	Do.	12,000	4 00	....	....	
	Jeffersonville	Md.	30,000	25		Do.	4,000	4 00	....	....	
1853	Jersey City	N. J.	300,000	—	5	Do.	30,000	3 00	150	....	No sales since formation of Hoboken Co.
1858	Jersey Shore	Pa.	15,000	25	—	Do.	2,000	3 70	....	....	
1856	Johnstown	Pa.	80,000	25	3	Do.	8,000	3 00	....	....	
1857	Joliet	Ill.	300,000	100	—	June & December.	6,000	4 00	....	....	
1858	Kalamazoo	Mich.	30,000	50	5	Do.	10,000	4 00	....	....	
1860	Keene	N. H.	60,000	100	—	Do.	4,500	4 00	....	....	
1855	Keokuk	Iowa.	100,000	100	—	January & July.	10,000	4 50	....	....	
1855	Kingston	Pa.	50,000	50	—	Do.	3,000	4 00	....	....	
1859	Kittanning	Pa.	20,000	—	—	Doubtful.	5,000	4 00	....	....	Said to be a fraud.
1854	Knoxville	Tenn.	63,000	—	—	April & October.	4,000	5 00	....	....	
1860	Laconia	N. H.	20,000	100	—	Do.	4,000	6 00	....	....	
1859	La Crosse City	Wis.	100,000	50	—	June & December.	10,000	8 00	....	....	Petroleum and Wood Gas.
1854	Lafayette	Ind.	60,000	50	4	January & July.	10,000	3 25	....	....	
1856	Lambertville	N. J.	30,000	25	—	Do.	2,500	4 00	....	....	
1849	Lancaster	Pa.	100,000	50	4	Do.	10,000	3 00	....	....	
1856	Lancaster	O.	25,000	100	5	Do.	5,000	3 50	....	....	
1855	Lansinburg	N. Y.	25,000	100	—	Private Works.	7,000	4 00	....	....	
1849	Lawrence	Mass.	200,000	100	4	February & August.	15,000	3 50	....	....	
1859	Leavenworth	Kansas.	200,000	25	—	Private Works.	15,000	4 00	....	....	
1856	Lebanon	Pa.	26,000	50	—	February & August.	5,000	4 00	....	....	
1861	Le Roy	N. Y.	25,000	50	—	Do.	4,000	4 00	....	....	
1858	Lewisburg	Pa.	20,000	100	—	January & July.	4,000	4 00	....	....	
1852	Lewiston	Me.	100,000	100	3	Do.	10,000	3 20	....	....	
1856	Lewistown	Pa.	30,000	50	3	April & October.	3,000	3 10	....	....	
1853	Lexington	Ky.	100,000	25	4	January & July.	5,000	4 00	....	....	
1853	Little Falls	N. Y.	112,000	25	—	Do.	3,500	7 00	....	....	
1861	Little Rock	Ark.	20,000	—	—	Do.	5,000	6 00	....	....	
1858	Lockhaven	Pa.	28,000	—	—	Do.	3,000	4 00	....	....	
	Lockport	N. Y.	100,000	50	—	Do.	4,000	4 00	....½	....	
	Logansport	Ind.	40,000		5	April & October.	5,000	4 00	105		But $481,400 stock has been sold. This Company has a large contingent fund and undivided profit on hand.
1838	Louisville	Ky.	600,000	50	6	January & July.	80,000	2 50	125	....	
1849	Lowell	Mass.	200,000	25	5	Do.	50,000	3 25	....	....	
1852	Lynchburg	Va.	70,000	25	5	Do.	6,000	3 80	....	....	
1852	Lynn	Mass.	55,000	50	4	Do.	20,000	4 00	....	....	
1859	Lyons	N. Y.	30,000	100	—	Do.	4,000	4 00	....	....	
1852	Macon	Ga.	75,160	25	6	Do.	5,000	5 00	....	....	
1851	Madison	Ind.	160,000	25	3	Do.	10,100	3 50	....	....	
1855	Madison	Wis.	100,000	25	—	Do.	5,000	5 00	....	....	
1854	Malden & Melrose	Mass.	50,000	25	3	February & August.	5,000	4 00	....	....	
1852	Manayunk	Pa.	40,000	100	—	Do.	7,000	4 00	....	....	
1852	Manchester	N. H.	100,000	100	5	January & July.	25,000	3 00	....	....	
1830	Manhattan (N. Y. City)	N. Y.	4,000,000	50	5	Do.	600,000	2 50	....	....	
	Mansfield	O.	25,000	—	—	Do.	10,000	4 00	....	....	
1854	Marblehead	Mass.	40,000	100	3	Do.	1,000	4 00	....	....	
	Marlboro'	Mass.	20,000	—	—	Do.	8,000	4 00	....	....	
	Mauch Chunk	Pa.	50,000	50	—	Do.	7,000	4 00	....	....	
1857	Marietta	O.	50,000	50	—	Do.	7,000	4 00	....	....	
1860	Marion	O.	12,000	25	5	April & October.	1,500	13 55	....	....	Stock firm.
1858	Marysville	Cal.	50,000	100	—	January & July.	4,000	2 50	....	....	
1857	Massilon	O.	20,000	25	—	Do.	5,000	3 00	....	....	
1855	Meadville	Pa.	39,500	25	—	Do.	4,000	3 50	....	....	
	Medina	N. Y.	2,000	100	—	Do.	2,000	7 00	....	....	
1852	Memphis	Tenn.	300,000	100	5	June & December.	12,000	5 00	....	....	
	Meriden	Ct.	20,000			Do.			....	....	
1859	Metropolitan (N. Y. City)	N. Y.	1,000,000	100	—	January & July.	200,000	2 50	....	....	
1859	Middleboro'	Mass.	15,000	—	—	Private Works.		6 00	....	....	
1853	Middletown	Ct.	50,000	25	3	March & September.	5,000	3 80	....	....	Owned by G. T. Sutton.
	Middletown	N. Y.		25	—	Private Works.	3,000	3 00	....	....	
	Milford	Mass.	20,000	—	—	Do.		4 00	....	....	
	Milledgeville	Ga.	100,000	50	—	Do.		5 00	....	....	
	Milton	Pa.	10,000			Do.			....	....	
1847	Milwaukee	Wis.	400,000	50	5	January & July.	24,000	3 50	150	....	
1852	Mobile	Ala.	200,000	—	—	Do.	30,000	4 50	....	....	
1836	Monroe	Mich.	40,000	50	—	Do.	5,000	3 50	50	....	
1852	Montgomery	Ala.	100,000	25	4	February & August.	7,000	6 00	....	....	
1856	Montpelier	Vt.	30,000	25	3	January & July.	5,000	4 50	....	....	
1859	Morrisania	N. Y.	30,000	50	—	Do.		4 00	....	....	
1859	Morristown	N. J.	18,000	50	—	Do.	3,500	4 00	....	....	
1854	Mount Holly	N. J.	16,650	25	3	April & October.	2,000	7 00	....	....	
	Mount Vernon	O.	50,000	100	—	Do.		4 00	....	....	
1857	Muscatine	Iowa.	50,000	100	—	January & July.	3,000	4 50	....	....	
1854	Nantucket	Mass.	50,000	100	3	February & August.	6,000	4 00	....	....	

GAS-LIGHT COMPANIES IN THE UNITED STATES.—Continued.

Compiled from official sources expressly for the AMERICAN GAS-LIGHT JOURNAL.

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. per Sh. $	Semi-Ann'l Div.	Dividends Payable.	Population of Gas District	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1852	Nashua	N. H.	45,000	50	3½	January & July.	10,000	3 50	....	....	
1850	Nashville	Tenn.	200,000	50	5	Do.	25,000	3 50	....	....	
1858	Natchez	Miss.	46,000	50	—	Do.	20,000	5 00	....	....	
	Nevada City	Cal.							....	....	
1852	New Albany	Ind.	200,000	50	3½	Do.	16,000	3 50	....	....	
1846	Newark	N. J.	362,000	50	5	Do.	45,000	3 62	130	....	Always a favorite stock.
1856	Newark	O.	30,000	100	—	Do.	7,000	5 40	....	....	
1852	New Bedford	Mass.	130,000	100	5	Do.	15,000	2 90	102	....	Well managed and kept quiet.
1859	Newbern	N. C.	22,000	100	6	Do.	6,000	3 50	....	....	
	New Britain	Ct.	30,000	20	5	Do.	3,000	4 00	....	....	
1851	New Brunswick	N. J.	100,000	20	4	Do.	8,000	3 00	115	....	
1852	Newburg	N. Y.	67,000	20	4	Do.	10,000	4 00	105	....	
1852	Newburyport	Mass.	150,000	10	4	Do.	9,000	4 00	92½	....	
1857	Newcastle	Del.	32,300	10	3	Do.	4,000	4 00	90	....	
1847	New Haven	Ct.	250,000	25	4	Do.	20,000	3 00	155	....	None in market.
1853	New London	Ct.	70,000	50	3	Do.	12,000	4 00	105	....	
1835	New Orleans	La.	1,500,000	100	6	Do.	120,000	4 00	180	....	
1853	Newport	R. I.	130,200	100	4	Do.	10 000	3 50	112	....	
1854	Newton & Watertown	Mass.	300,000	100	2	Do.	10,000	4 00	....	....	
	Newton	N. J.	30,000	—	—	Do.	3,000	4 00	....	....	
	Newton	Pa.	20,000	50	—	Do.	2,500	4 00	....	....	
	Newtown	N. Y.									
1828	New York	N. Y.	1,000 000	50	5	May & November.	100,000	2 50	300	....	
1859	Niagara Falls	N. Y.	15,000	25	—	Do.	3,000	4 00	90	....	
	Norfolk	Va.	60,000	25	—	Do.	40,000	4 00	....	....	
1853	Norristown	Pa.	41,700	25	4	June & December.	8,000	3 50	....	....	
1855	North Attleboro'	Mass.	50,000	100	3½	Do.	6,000	4 00	....	....	
	Northern Liberties	Pa.	400,000	25	7	City Works.	40,000	2 50	....	....	
	North Adams	Mass.	25,000	—	—	March & September.	30,000	4 00	....	....	
1856	Northampton	Mass.	35,000	25	3	January & July.	4 500	4 00	....	....	
1859	North Bridgewater	Mass.	16,000	100	4	June & December.	1,000	7 00	....	....	
1856	Norwalk	Ct.	30,000	150	4	February & August.	6,000	4 00	....	....	
1859	Norwalk	O.	30,000	25	—	January & July.	4,000	4 00	....	....	
1854	Norwich	Ct.	75,000	25	3½	Do.	12,000	3 50	....	....	
1861	Norwich	N. Y.	12,000	50	—	Do.	2,500	4 00	....	....	
1859	Nyack	N Y.	20 000	100	—	Do.	2,500	4 00	....	....	
1860	Oberlin	O.	10,000	—	—	Do.	1,200	4 00	....	....	
1855	Ogdensburg	N. Y.	75,000	50	5	Do.	9,000	4 00	....	....	
1859	Orange	N. J.	65,000	25	—	Do.	6,000	3 50	....	....	
1852	Oswego	N. Y.	81,250	100	3½	Do.	15,000	4 00	105	....	
1855	Ottawa	Ill.	45,000	100	6½	Do.	6,000	4 00	....	....	Good works, built by Hoy, Jr., & Kennedy.
1856	Owego	N. Y.	40,000	50	3½	Do.	5,000	4 00	....	....	
1860	Owensboro'	Ky.	25,000	25	—	Do.	4,000	3 50	....	....	
1856	Paducah	Ky.	75,000	100	—	May & November.	4,000	5 00	....	....	
1861	Painsville	O.	40,000	25	5	Do.	2,500	5 00	....	....	
1856	Palmyra	N. Y.	12,000	25	—	January & July.	3,000	7 00	....	....	
1847	Paterson	N. J.	125,000	25	3	Do.	20,000	3 50	95	....	
1850	Pawtucket	R I.	75,000	50	4	Do.	12 000	3 00	....	....	
1855	Peekskill	N. Y.	31,000	50	3	June & December.	4,000	4 00	....	....	Surplus $10,000 May 15, 1863.
1860	Penn Yan	N. Y.	12,000	50	5	Do.	3,000	4 00	....	....	Works leased to Gilbert T. Sutton.
1859	Peoples', Chicago	Ill.	500,000	50	New	Do.	100,000	2 50	....	....	
1855	Peoria	Ill.	100,000	50	4	Do.	8,000	3 50	....	....	What is this Company doing?
1852	Petersburg	Va.	120,000	—	5	January & July.	20,000	3 80	....	....	
1841	Philadelphia	Pa.	3,000,000	50	—	City Works.	650,000	2 50	....	....	
1855	Piqua	O.	50,000	50	—	January & July.	6,500	4 00	....	....	
1835	Pittsburg	Pa.	300,000	100	5	Do.	60,000	1 50	115	....	
1854	Pittsfield	Mass.	50,000	100	5	Do.	4,500	4 00	....	....	
1858	Placerville	Cal.	30,000	50	—	Do.	4,500	10 00	....	....	
1860	Plainfield	N. J.	25,000	50	—	Do.	2,500	4 00	....	....	
1859	Platisburg	N. Y.	16,000	50	—	January & July.	5,000	7 00	....	....	
1853	Plymouth	Mass.	40,000	100	—	April & October.	8,000	4 00	....	....	
1860	Port Chester	N. Y.	50,000	50	—	Do.	4,000	4 00	....		
1860	Port Jervis	N. Y.	20,000	100	—	Do.	3,000	4 10	....	....	
1849	Portland	Me.	300,000	50	4	January & July.	30,000	3 00	....	....	
1850	Portland	Oreg.	50,000	50	—	Do.	3,500	8 00	....	....	
1850	Port Lavacca	Texas.	50,000	100	—	Do.	2,500	7 00	....	....	
1851	Portsmouth	N. H.	70,000	100	8	April & October.	6,500	3 70	....	....	
1855	Portsmouth	O.	50 000	50	4	January & July.	10,000	3 50	....	....	
1855	Portsmouth	Va.	100,000	50	4	Do.	4,000	4 00	....	....	
1856	Pottstown	Pa.	20,000	50	3	Do.	3,500	4 00	....	....	
1850	Pottsville	Pa.	110,000	50	2	Do.	10,000	3 50	....	....	
1850	Poughkeepsie	N. Y.	84,000	25	4	March & September.	15,000	3 50	120	110	
1848	Providence	R. I.	1,000,000	50	4	January & July.	60,000	3 00	122	....	
1858	Quincy	Ill.	300,000	50	4	June & December.	12 000	3 50	....	....	
	Quincy	Mass.	00,000	00	—	Do.	00,0 0	0 00	....	....	
1855	Racine	Wis.	43,500	26	—	Do.	7,000	3 50	....	....	
1857	Rahway	N. J.	50,000	20	—	January & July.	5,000	4 00	....	....	
1858	Raleigh	N. C.	25 000	100	6	May & Novrmber.	5,000	6 00	....	....	
1848	Reading	Pa.	100,000	25	4	January & July.	25,000	3 00	....	....	
1851	Richmond	Va.	341.975	—	—	City Works.	30,000	3 00	....	....	Jeff. Davis has extinguished the gas-lights of Richmond, Va.
1859	Richmond	Mass.	40,000	25	—	January & July.	3,000	4 00	....	....	
	Richmond County	N. Y.									
1859	Ripley	O.	25.000	50	—	April & October.	2,000	4 00	....	....	
1852	Rochester	N. Y.	200,000	50	5	January & July.	50,000	2 50	....	....	
1857	Rockford	Ill.	40,000	50	—	Do.	4,000	4 00	....	....	
1854	Rock Island	Ill.	100,000	50	—	Do.	6,000	4 50	....	....	
1854	Rockland	Me.	50,000	100	—	Do.	6,000	4 40	....	....	
1852	Rome	N. Y.	85,000	100	3½	Do.	10,000	3 60	....	....	
1854	Rondout and Kingston	N. Y.	65,150	20	3½	June & December.	10.000	3 80	....	....	
1854	Roxbury	Mass.	150,000	100	5	January & July.	20,000	3 50	....	....	
1850	Rutland	Vt.	20,000	25	—	Do.	4,000	3 50	....	....	
	Saco	Me.	71,600	100	3½	April & October.	8,000	4 00	....	....	
1857	Sacramento	Cal.	500,000	100	—	Do.	40,000	10 00	....	....	
1859	Sag Harbor	N. Y.	20,000	—	—	Do.	4,000	4 00	....	....	
1858	Saint Albans	Vt.	15,000	20	—	Do.	3,000	7 00	....	....	
	Saint Johnsbury	Vt.	30,000	25	—	Do.	4,000	4 00	....	....	
1857	Saint Joseph	Mo.	50,000	100	5	January & July.	6,000	5 00	....	....	
1859	Saint Louis	Mo.	600 000	50	—	June & December.	180 000	3 50	....	....	
1857	Saint Paul	Min.	200,000	50	3	January & July.	10.000	6 00	....	....	Surplus $10,000, May 15, 1863.
1856	Salem	N. J.	30,000	25	3	Do.	5,000	3 86	....	....	
1850	Salem	Mass.	200,000	100	4	February & August.	30,000	3 24	..	....	
1859	Salem	O.	25,000	20	—	Do.	3,000	3 00	....	....	
1859	Salisbury	N. C.	14,000	50	6	May & November.	3,500	6 00	....	....	
	Salisbury Mills	Mass.	1,250	25	—	Do.	3,000	4 00	....	....	
	Salmon Falls	Me.	25,000	100	—	Do.	3,000	4 00	....	....	
	San Antonio	Texas.	75,000	20	—	Do.	40,000	6 00	....	....	
1854	Sandusky	O.	75.000	50	—	April & October.	9,000	3 00	....	....	
1859	Sandwich	Mass.	10,000	—	—	Private Works.	2,000	3 50	....	....	
1852	San Francisco	Cal.	2,000,000	100	4½	Do.	100,000	6 50	100	....	
	San Jose	Cal.							....	....	
1853	Saratoga Springs	N. Y.	39,000	100	—	January & July.	6,000	3 60	70	....	
	Saugerties	N. Y.	30,000	20	—	Do.	4,000	3 00	....	....	
1849	Savannah	Ga.	200,000	25	5	Do.	10,000	3 75	....	....	
1851	S benectady	N. Y.	50,000	—	—	Private Works.	11,000	4 00	....	....	
1858	Scranton, Gas and Water	Pa.	100,000	25	—	January & July.	6,000	3 80	....	....	
1857	Selma	Ala.	20.000	100	—	Do.	2.000	5 00	....	....	About trying Water-Gas.
1856	Seneca Falls and Waterloo	N. Y.	80,000	50	3	Do.	10.000	4 00	100	....	
	Shreveport	La.	40,000	25	—	Do.	3,000	0 50	....	....	
1856	Sing Sing	N. Y.	40,000	100	—	Do.	3,000	3 50	....	....	
	Smyrna	Del.						4 00	....	....	Petroleum Gas.
1860	South Adams	Mass.	10,000	25	—	Do.	3,000	4 00	....	....	
1859	South Bridge	Mass.	5 000	25	—	Do.	4.010	6 00	....	....	
	South Boston	Mass.	200.000	50	—	Do.	60,000	3 25	110	....	
	Springfield	O.	200.000	100	—	Do	20,000	3 50	....	....	
1854	Springfield	Ill.	75.000	50	—	January & July.	10,000	3 50	....	....	
1848	Springfield	Mass.	100,000	500	5	February & August.	10,000	3 60	140	....	
1856	Stamford	Ct.	6.250	25	5	April & October.	3,000	3 50	....	....	
1857	Staten Island	N. Y.	150,000	50	5	January & July.	26,000	4 00	95	....	

GAS-LIGHT COMPANIES IN THE UNITED STATES.—Continued.

Compiled from official sources expressly for the AMERICAN GAS-LIGHT JOURNAL,

CORRECTED BY JOHN B. MURRAY, No. 39 NASSAU STREET, NEW YORK, DEALER IN GAS-LIGHT SHARES.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. per Sh. $	Semi-Ann'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1859	Staunton	Va.	18,000	50	6	January & July.	4,000	7 00	....	....	
	Steubenville	O.	150,000	100	—	Do.	15,000	4 00	....	....	
	Stockton	Cal.	50,000	—	—	Do.	8,000	10 00	....	....	
1848	Syracuse	N. Y.	125,000	25	5	March & September.	25,000	3 00	112	....	
	Tamaqua	Pa.	40.000	25	—	Do.	3,000	4 00	....	....	
1859	Tarrytown and Irvington	N. Y.	70,000	50	—	January & July.	3,000	4 00	....	....	
1853	Taunton	Mass.	100.000	50	4	Do.	10,000	4 00	....	....	
	Terre Haute	Ind.	100,000	100	—	Do.	3,000	4 00	....	....	
	Thompsonville	Ct.	25,000	50	—	Do.	4,000	4 50	....	....	
	Tiffin	O.	25,000	20	—	Do.	4,000	4 00	....	....	
1853	Toledo	O.	100,000	50	3	Do.	8,000	3 50	....	....	
1847	Trenton	N. J.	100,000	20	4	Do.	15,000	3 42	....	110	
1848	Troy	N. Y.	200,000	100	4	June & December.	35,000	3 00	160	....	
1856	Urbana	O.	30,000	25	—	April & October.	3,500	4 00	....	....	
1849	Utica	N. Y.	80,000	100	4	Do.	22,000	3 60	....	....	
1853	Vicksburg	Miss.	66,000	50	—	March & September.	4,000	4 50	....	....	
1859	Vincennes	Ind.	25,000	100	—	January & July.	2,000	4 00	....	....	
1863	Virginia City,	N. T.					20,000				
1858	Walden	N. Y.	2,500	—	—	Private Works.	1,000	6 00	....	....	
1858	Waltham	Mass.	100.000	100	4	January & July.	3,000	4 00	....	....	
1857	Ware	Mass.	30,000	20	—	Do.	3,500	4 00	....	....	
1861	Warren	O	30,000	50	—	Do.	4,000	3 00	....	....	
1854	Warren	R. I.	20,000	25	—	Do.	3,000	4 00	....	....	
1855	Washington	D. C.	500,000	20	5	Do.	50,000	2 61	....	100	
1859	Washington	N. C.	15,000	100	—	April & October.	1,500	6 00	....	....	
1848	Washington	Pa.	20,000	25	4	January & July.	4,000	3 00	....	....	
1854	Waterbury	Ct.	100,000	25	—	Do.	4,000	4 00	....	....	
1852	Waterford	N. Y.	12,000	25	—	Do.	4,000	4 00	....	....	
1852	Watertown	N. Y.	20,000	100	—	Do.	10,000	7 00	....	....	
1856	Watertown	Wis.	25,000	100	—	Do.	5,000	5 00	....	....	
1858	Wautoma	Wis.	30,000	50	—	Do.	3,000	4 50	....	....	
1857	Waverly	Miss.	20,000	100	—	April & October.	4,000	5 00	....	....	
1854	West Cambridge	Mass.	60,000	100	—	February & August.	10 000	4 00	....	....	
1852	Westchester	Pa	100,000	25	2½	Do.	8,500	3 50	....	....	
	Westfield	Mass.	25 000	100	6	Do.	4,000	4 00	....	....	
	Weston	O.	20,000	25	—	Do.		5 00	....	....	
1857	West Point	N. Y.	50,000	—	—	United States Military	Academy.	2 00	....	....	
1853	West Troy	N. Y.	100,000	50	3	January & July.	10,000	3 60	85	....	
1850	Wheeling	Va.	75 000	25	6	Do.	12,000	2 70	....	....	
	White Plains	N. Y.	20,000	20	—	Do.			....	....	
1856	Wilkesbarre	Pa.	50,000	50	—	May & November.	4,000	3 33	100	80	
1850	Williamsburg	N. Y.	1,000,000	50	5	January & July.	60,000	3 00	....	....	
1858	Williamsburg	Va.	30.000	25	—	Do.	3,000	4 00	....	....	Camp-fires of the Union Army light up this place at present.
1857	Williamsport	Pa.	70,000	25	4	Do.	3,500	3 80	....	....	
1859	Willimantic	Ct.	12,000	—	—	Do.	2,500	3 50	....	....	
1853	Wilmington	N. C.	60,000	50	5	Do.	8,000	5 00	....	....	
1852	Wilmington	Del.	200,000	50	5	February & August.	20 000	3 00	....	....	
1854	Winchester	Va.	36,000	50	6	January & July.	5,000	4 00	....	....	
1861	Windsor	Vt.	20,000	25		Do.	2,000	6 00			Make Petroleum Gas.
	Woburn	Mass.	20,000	—	—	Do.	3,000	4 00	....	....	
1856	Woodstock	Vt.	10,000	50	4	Do.	4 000	6 00	....	....	
1853	Woonsocket	R. I.	82,500	100	4	April & October.	4,000	3 50	....	....	
1856	Wooster	O.	25,000	50	—	January & July.	6 000	3 00	....	....	
1849	Worcester	Mass.	160,000	100	5	Do.	15,000	3 50	....	....	
1855	Xenia	O.	40,000	50	—	Do.	8,000	4 00	....	....	
1854	Yonkers	N. Y.	100,000	50	3½	Do.	10,000	3 50	110	16½	
1849	York	Pa.	40,000	57	3	June & December.	10.000	3 50	....	....	
	Yorkville	S. C.	20 000	25	—	Do.	4.000	4 00	....	....	
1858	Ypsilanti	Mich.	20,000	50	5	February & August	6 000	14 00	....	....	
1850	Yreka	Cal.	80,000	100	—	Do.	2,000	0 00	....	....	
1848	Zanesville	O.	44,600	25	4	Do.	10,000	8 00	....	....	

GAS-LIGHT COMPANIES IN THE BRITISH PROVINCES OF NORTH AMERICA.

When Chartered.	Town.	Province	Chartered Capital.	Par Val. per Sh. $	Semi-An'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
1854	Belleville	C. W.	33,040	100	4	January & July.	1,200	5 00	....	....	
1854	Brantford	C. W.	32,000	100	2½	Do.			....	....	
	Brockville	C. W.	50,000	—	—	Do.	5,000	4 00	....	....	
	Chatham	N. B.	50,000	—	—				....	....	
1854	Charlotte Town	P. E. I.	50,000	100	5	Do.	3,000	3 50	....	....	
1857	Cobourg	C. W.	30,000	—	-	February & August.	4,000		....	....	
	Dundas	C. W.	30,000	—	—	Do.	6,000	4 00	....	....	
	Frederick	N. B.	50,000	—	—	Do.			....	....	
1843	Halifax	N. S.	160,000	40	7	May.	32,000	3 03	....	....	
1850	Hamilton	C. W.	125,000	40	5	March & September.	20,000	3 50	....	....	
1848	Kingston	C. W.	80,000	100	—	Do.	6,000	3 50	....	....	
1853	London	C. W.	100,000	20	5	May & November.	5,000	5 00	....	....	
1847	Montreal	C. E.	400,000	40	—	March & September.	110,000	2 80	....	118	Last sale at this figure.
1854	Ottawa	C. W.	40 000	40	5	Do.	5,000	4 50	....	....	
1859	Point Levi	C. E.	25,000	25	—	January & July.	4,000	3 50	....	....	
1859	Port Hope	C. W.	28,000	20	4	May & November.	4,500	3 50	....	....	
1847	Quebec	C. E.	200,000	200	4	January & July.	60,000	3 00	....	....	
1848	Saint Catherine's	C. W.	80,000	20	—	May & November.	7,000	4 50	....	....	
1859	Saint Hyacinthe	C. E.	15 000	20	—	Do.	4,000	4 00	....	....	
	Saint John's	N. B.	170,000	85	4	June & December.	25,000	3 00	110	110	Sales at this figure.
	Saint John's	N. F.	50,000	—	4	Do.	30,000		....	....	
1858	Sorel	C. E.	14,000	20	4	Do.	4,000	3 00	....	....	
1848	Toronto	C. W.	400,000	50	—		50,000	3 00	....	....	This Co. pay a quarterly div. of 2 per ct.

GAS-LIGHT COMPANIES IN CUBA, MEXICO, SOUTH AMERICA AND NEW ZEALAND.

When Chartered.	Town.	State.	Chartered Capital.	Par Val. per Sh. $	Semi-An'l Div'd.	Dividends Payable.	Population of Gas District.	Price per 1000 Feet.	Asked pr. cent.	Offered pr. cent.	REMARKS.
	Callao	Chile.		—	—	January & July.	20,000	7 00	....	....	
	Cardenas	Cuba.	50,000	—	—	Do.	180,000	5 00	....	....	
1857	Compania Cubana	Hav'a.	500,000	500	10	Do.			....	....	
	Cienfugos	Cuba.		—	—	Do.	12,000	5 00	....	....	These four towns are lighted by the Compania Cubana of Havana.
	Guanabacoa	Cuba.		—	—	Do.	14,000	5 50	....	....	
	Regla	Cuba.		—	—	Do.	10,000	5 00	....	....	
	Trinidad	Cuba.		—	—	Do.	16,000	5 00	....	....	
	Guiness	Cuba.		—	—	Do.			....	....	
	Guyaquil	S. A.	150,000	—	—	Do.	35,000		....	....	
	Havana	Cuba.	2,000,000	500	—	Quarterly.	200,000	5 00	....	175	
	Lima	Peru.	100,000	—	—	January & July.	150,000		....	....	
	Maranham (Chartered)			—	—	Do.			....	....	
	Matanzas	Cuba.	50,000	—	—	Do.	180,000	8 50	....	....	
	Mexico City	Mex.	550,000	—	—	Do.			....	....	
	Montevideo	S. A.	500,000	—	—	Do.			....	....	
	Para (Chartered)			—	—	Do.			....	....	
1854	Rio de Janeiro	S. A.	1,000,000	500	7½	Do.	800,000	4 00	....	....	
	San Iago	Chile.	500,000	—	—	Do.	180,000	7 00	....	....	
1857	Saint Jago de Cuba	Cuba.	450.000	500	—	Do.	25 000	5 00	....	....	
	Valparaiso	Chile.	500,000	—	—	Do.	85,000	6 00	....	....	
	Vera Cruz	Mex	500,000	—	—	Do.			....	....	
	Vi le Clara	Cuba.	50,000	—	—	Do.			....	....	
	Auckland	N. Z.			—				....	....	

REPORTS OF GAS-LIGHT COMPANIES.

MONTREAL, C. E.

Annual Report of the Directors to the Shareholders of of the New City Gas Company.

The directors of this company, in discharge of the trust confided to them, have now the pleasure to submit, for the consideration of the shareholders, their Seventeenth Annual Report of the company's operations, together with the managing director's report. The company's balance-sheet and working account for the year ending 31st December last are laid on the table; and they believe that the whole, on inspection, will show that the company is making a steady progress, and that the result of the year's working is satisfactory.

It will be gratifying to the shareholders to know that, notwi hstanding the reduction made during the past year of one-fifteenth or about 7 per cent. on the price charged for gas, say from 15s. to 14s. net per 1,000 cubic feet, the affairs of the company are in a prosperous condition; and it is also a source of satisfaction to the directors that they can now report that consumers are furnished with gas by this company at a lower rate than is charged in any other Canadian city.

Your directors have also the pleasure to state, that they are now in a position to inform the shareholders that the long-pending negotiations with the corporation, in reference to the lighting of the street-lamps, was brought to a termination last fall,—the new terms being a reduction of $2.00 in the price per lamp, the corporation increasing the number of the lamps from 600 to 700, only a small extension of the mains being required for same.

A dividend of 4 per cent. for the half-year ending 15th March next has been declared, and will be payable on that date.

The books and accounts of the company have been audited by Mr. J. Plimsoll, accountant, and were found correct, as will be seen by reference to his letter also on the table.

The following directors retire by rotation, all of whom are eligible for re-election: Messrs. Andrew Wilson, Louis Beaudry, A. M. Delisle, and J. G. McKenzie.

All of which is respectfully submitted.

H. Thomas, *Vice-President.*

Office of the New City Gas-Company,
Montreal, 23d February, 1864.

Managing Director's Report.

To the President and Directors of the New City Gas Company.

Gentlemen,—It has become my duty to lay before you, prior to the Annual General Meeting of the shareholders of this company, my report for the past year, which I trust will be found satisfactory.

IMPROVEMENTS AND EXTENSIONS.

The want of increased facilities for the storing of the company's coals having become a pressing necessity, there was erected during the last summer a large coal-shed in rear of the building occupied as a dwelling by the superintendent of works, and quite convenient to the retort-houses, capable of containing about 3,000 chaldrons. The company now possess covered storage in all for about 6,000 chaldrons of coal.

MAIN AND SERVICE PIPES.

5,510 yards of New street mains were laid during the past year; 1,885 yards were removed and replaced by others of larger dimensions, and during the same period 224 new service pipes have been laid.

NUMBER OF CONSUMERS AND STREET LAMPS.

	Consumers.	Street Lamps.
Number by last report was	2,665	604
Do. at present	2,722	705
Increase	57	101

In St. Catherine street, west, and immediate neighborhood, there is a deficiency in the supply of gas, caused by the large number of first-class buildings erected in that vicinity within a comparatively short period. The company have had the matter under consideration, and arrangements are being made to remedy this, as early as possible, next spring, by the laying down of new feeders of large capacity through Cemetery street, &c., connecting with St. Catherine street, to which the main pipe, supplying the western portion of the city are attached, and which it is expected, will afford an abundant supply of gas to the localities in question for some time to come.

It also affords me pleasure to state that the improvements to the company's works are now all completed, and they will be found, on examination, to be in good working condition.

In conclusion, I have much satisfaction in stating that the secretary, superintendent, and the other officers of the company, have discharged their several duties with zeal and efficiency.

Respectfully submitted.

L. Beaudry, *Managing Director.*

Office of the New City Gas Company,
Montreal, 23d February, 1864.

NEW CITY GAS COMPANY OF MONTREAL.

Working account from 31st December, 1862, to 31st December, 1863.

Dr.

To coals carbonized—value		$45,520 80
" salaries		7,626 66
" stokers and blacksmith—wages	$10,195 95	
" pipe-layers and labor account—wages	4,977 70	
" gas-fitters—wages	1,798 48	
" lamp-lighters' wages and lamp-fittings	3,028 35	
		20,000 48
" retorts and benches account	2,212 49	
" fire-brick and clay account	1,082 75	
		3,295 24
" carpenter and smith work, lumber, &c	375 46	
" intesest account	2,651 45	
" water rent, &c	373 99	
" ground and office rent	634 67	
" corporation, assessment, business tax, &c	1,385 70	
		5,421 27
" lime and baskets for puryfying	873 60	
" cartage account	1,905 39	
" printing, advertising, and stationery account	409 43	
" high wines	221 55	
" paints, oils, glass, &c	470 59	
" hardware account	263 45	
" castings, plumbing, brass-work, &c	190 59	
" auditor's services	100 00	
" notarial and other professional services	168 67	
" wear and tear—general	10,000 00	
" insurance fund	4,000 00	
" miscellaneous expenses	161 92	
		18,765 24
		100,629 69
Surplus		44,142 60
		$144,772 29

Cr.

By gas-rent (revenue account 1863)	$120,819 29
" coke sales	19,421 65
" tar "	3,733 13
" breeze "	916 72
" sales of old metal, &c	881 50
	$144,772 29

E. & O. E.

Montreal, 31st December, 1863.

H. Thomas, *Vice-President New City Gas-Company,* [L. S.]

Geo. Robson, *Secretary.*

Certified to be correct—John Plimsoll, *Auditor.*

Balance sheet from 31st December, 1862, to 31st December, 1863.

Dr.

To capital stock paid up	$299,280 00	
" new stock	49,590 00	
" amount borrowed on interest	44,800 00	
Total capital of the company		393,670 00
" amount of *constitut (non rachetable)*	600 00	
" dividends, amount unpaid	1,545 05	
" capital and scrip certificate account	810 00	
" insurance fund	8,000 00	
" open accounts, amount due	1,912 90	
		12,867 95
" profit and loss account		46,479 86
		$453,017 81

Cr.

By gas-works		$356,517 82
" Ann street property, &c		3,014 89
" cash on hand	$7,222 66	
" coals on hand—value	25,432 08	
" meters on hand "	28,516 19	
" Iron pipe and tubing on hand "	8,651 18	
" retorts, cast-iron and clay "	1,551 98	
" fire-brick and clay account "	5,000 29	
By coke on hand "	2,025 00	
" bills receivable	2,096 86	
		78,496 23
" open accounts		14,988 87
		$453,017 81

E. & O. E.

Montreal, 31st December, 1863.

H. Thomas, *Vice-President New City Gas-Company.* [L. S.]

Geo. Robson, *Secretary*

Certified to be correct—John Plimsoll, *Auditor.*

(Copy.) Place d'Armes,
Montreal, 27th Feb., 1864.

To Messrs. the Directors of the New City Gas Company of Montreal:

Gentlemen,—Having been favored with your appointment as auditor of the company's books for the past year, I have to report, as the result of my labor, that the statements herewith presented, bearing my signature conjointly with that of your secretary, present a faithful and correct account of the business operations of the company for the year ending 31st December last.

I would add that, as an essential part of my duty, I have thoroughly tested every recorded detail of the business, verified all disbursements charged, by the necessary documentary evidence, and consequently have pleasure in bearing testimony to the continued regularity and order manifested in your system of accounts.

It would be ungracious on my part not to acknowledge the sustained courteous attention to my requirements during the progress of the audit, now, as on former occasions, extended to the writer, by your managing director and secretary.

Thanking you for the renewal of your confidence,

I have the honor to be, gentlemen,

Your obedient servant,

(Signed) John Plimsoll.

Advantages of Gas in Private Houses.—The admirable pamphlet on the *Advantages of Gas in Private Houses*, by J. O. N. Rutter, Esq., of Black Rock, Brighton, England, has reached the enormous circulation of 191,000 copies. This little work is also translated into the French language, and is widely circulated on the Continent. It has done an immense amount of good in convincing the people of the advantages of gas over all other forms of artificial light, and the officers of gas companies order them by the quantity, and distribute them gratuitously among the people. The elegant style in which the book is written, and the clear manner in which it argues the question, carries conviction to most readers, and brings in a large accession of consumers. The power of the press is exemplified in the success of Mr. Rutter's pamphlet.

Gas in Ireland.—At Belfast the gas company charge 4s. 2d. per thousand cubic feet, subject to the following discounts:

On a quarterly consumption of 10,000 cubic feet, and not exceeding			50,000	Discount, 2½ per ct.
Above 50,000	"	"	100,000	5 " "
" 100,000	"	"	200,000	10 " "
" 200,000	"	"	400,000	15 " "
" 400,000	"	"		20 " "

For the convenience of consumers, the company supply meters and keep them in repair at the following charges:

A 3 light meter	1s. 4d.	per	quarter.
" 5 " "	1s. 8d.	"	"
" 10 " "	2s. 3d.	"	"
" 20 " "	3s. 2d.	"	"
" 30 " "	4s 0d.	"	"

and in proportion for larger sizes.

Homer, N. Y.—The Philadelphia *Coal Oil Circular* of March 7th, copies an article which appeared in this Journal more than a year ago, giving an account of the petroleum gas-works at Homer in this State. The *Circular* intimates that the process described is now in successful operation. This is a very serious mistake. The process referred to proved a signal failure, and was not in operation more than two or three weeks, when it gave way to coal-gas made in the ordinary way. The same process which was used for a time at Homer, was adopted at the St. Nicholas Hotel in this city, but in ten days it proved a failure, and the works were rebuilt by D. Parrish, Jr., Esq., who has run them successfully ever since.

SUPPLY OF PUBLIC LAMPS BY METER.

BY SAMUEL HUGHES, C. E., F. G. S.

In the origin of gas-lighting before the introduction of the gas-meter, the system of contract burning very commonly prevailed. The gas consumer instead of paying so much per 1000 feet for the gas which was actually used, was in the habit of paying a fixed sum per annum for each separate gas-burner. Thus there was a fixed price per annum for each argand burner, each bats-wing, each fish-tail, and each single-jet burner, it being understood that the burners were to be extinguished at a certain hour each night. We need scarcely point out how unsatisfactory this system must have been alike to the gas company and to the consumer. So glaring were its evils, so constant the misunderstandings which arose, and so frequent the complaints of the companies as to the quantity of gas which was burnt and not paid for, that the introduction of the meter, an instrument accurately recording the consumption, was hailed on both sides as a great boon.

In addition to the difficulty of checking, with any accuracy, the *period* of burning under the contract system, there was another, and still more serious element of uncertainty, which arose from the varying pressure at which the gas was supplied from different gas-works, and from the same works at different periods of the year and even during the course of the night. Of course the only mode of expressing the consumption of a burner with accuracy is to connect its consumption with pressure—in other words, to say the consumption is so many feet an hour at such and such pressure. If the pressure varies, the consumption varies also, and hence the impossibility of estimating with anything like certainty the consumption of any burner during any given period, unless the pressure remains constant during the whole of that period. It was no wonder, therefore, that the introduction of the meter gave great satisfaction both to the consumer and the producer. The gas companies now usually insert in all their acts a distinct provision by which every consumer is required to burn by meter; and without a meter to register the consumption of the gas, he is not entitled to have a supply of gas at all.

So far as private consumers are concerned, from the least to the greatest, the meter system is now universal, and the old vicious contract system only lingers in this country with regard to the public lamps, thus applying solely to a supply of gas which is paid for in most towns by a public lighting rate, charged alike on all the inhabitants. It may well be asked why should the contract system still prevail with regard to public lighting, and would it not be far better for all parties to abolish it for public lighting as well as for private, and allow the gas to be paid for by measure, instead of a vague and unsatisfactory method of guess-work? We have said the contract system, as applied to private lighting, was vicious and objectionable, owing to many causes; but when we examine its application to public lighting, the objections are even more serious than in the other case.

Under the old contracts, applied to private lighting, the consumer, at all events, had the privilege of lighting and extinguishing his own burners, and there was no interference by the officers of the gas company so long as he did not fraudulently substitute larger burners, or systematically keep his burners lighted during more hours than he contracted for. It is far otherwise with the public lighting, however, because here the servants of the gas company, as it were, enter the premises, light *when* they please, adjust the taps of the burners *how* they please, and extinguish the lights *when* they please. How would a private consumer like this treatment in his own house, or with regard to his own burners? Yet this is the treatment with which every individual ratepayer puts up in his collective capacity as one of the public contributing to the lighting rate. We are not only under the control of the lamp-lighter as to the times of lighting and extinguishing, but as to quantity of gas which shall be doled out to us—a condition which the consumer, under the old contract system, entirely escaped, because he could always turn on his taps how he pleased.

The contract system, always viciously objectionable, is rendered ten times worse in the case of public lighting, by the fact that the services of lighting and extinguishing are performed by lamp-lighters employed by the gas companies. The perseverance in a system so wretchedly unfair to the public, can only be accounted for by the peculiar views which were entertained fifty years ago as to the mysteries of gas lighting, and by the inconceivable apathy of the public officers, who, as a matter of dry routine, have prepared, year after year, the contracts for gas lighting in this country.

It is satisfactory to find, however, that a similar apathy has not been everywhere exhibited. The absurd injustice and want of all equity in the prevailing contract system has long been understood in many of the large manufacturing towns of Lancashire and Yorkshire. In nearly every Scotch town where meters are not used for the public lamps, the police light and extinguish; and as these are employed by the Police Commissioners or other local authority in each large town, the public is much better off than where this service is performed by the ordinary lamp-lighters. Nearly all over the Continent there is a distinct provision made against the caprice of the lamp-lighter in turning the tap so as to cut off the supply of gas according to his own fancy. In most continental towns, near the base of the lamp-post, is fixed a regulating tap, which is adjusted by the municipal authority and the gas company in concert, and this adjustment once made is beyond the control of the lamp-lighter, who only performs the simple duty of turning his own tap full on and full off, and thus one great source of fraud and uncertainty is avoided.

The street-lamp governors used in many parts of London serve, to a certain extent, the same end, and take away all discretion on the part of the lamp-lighters. There are, however, many serious objections of another kind to the street governors, which it would occupy too much space to enter upon at present.

Although the system followed in the Scotch and continental towns is decidedly preferable to that in which the lamp-lighter exercises his own discretion, it leaves untouched the question of measurement. This, of course, can only be effected by the use of meters—a change which cannot be too highly recommended in the case of public lighting.

RAPID INCREASE OF THE METER SYSTEM FOR PUBLIC LIGHTING.

Although public attention has only, within the last year or two, been called to this subject, the system of meters for public lamps has already been adopted in a great many towns throughout Great Britain. Amongst these are Torquay, Worthing, Lincoln, Leicester, St. Ives, Bolton, Loughborough, Reading, Portsmouth, Dunfermline, Otley, Perth, Southam, Salisbury, Aylesbury, St. Neots, Liverpool, and Stirling. In addition to these, the subject is now engaging a serious attention, which will probably lead to the adoption of meters, in Birmingham, Banbury, Uxbridge, Worksop, Weston-super-Mare, and many other towns; while in the metropolis itself it is understood the Commissioners of Sewers for the City of London have made arrangements for attaching meters to about 1,800 of their public lamps.

AVERAGE METER INDICATION.

Considering that the public lamps of a town constitute a group of burners, which are all intended to consume the same quantity of gas per hour, it would evidently be a wasteful and unnecessary expense to attach a meter to every lamp; accordingly, we find that arrangements have usually been made between the Gas Company and the local authority, to be satisfied with an average meter indication—that is, for instance, with the indications of one meter to every twelfth, or twentieth lamp. Thus in Torquay, St. Ives, and Reading, every twelfth lamp-post has a meter attached to it; Aylesbury has 1 meter to 15 lamps; Otley, 1 to 18; Loughborough and Portsmouth, 1 to 26; Southam, 1 to 38; Worthing, 1 to 70, and so on.

In three distinct cases Parliament has inserted special clauses in gas-bills, relative to the proportion of meters. Thus in the Torquay and in the Reading Gas Acts, the proportion was fixed at 1 meter to 12 lamps, and in the Portsmouth Gas Act, at 1 meter to 20 lamps.

RESULTS OF THE METER SYSTEM APPLIED TO PUBLIC LAMPS

In every case the saving has been very great, the consumption per hour having been brought down from 5 ft. an hour to an amount varying from 2 ft. up to 4 ft. an hour. The best results have been obtained at Reading, where the greatest pains have been taken to improve every part of the system. These improvements may be described as follows:

1. A perfect means of adjusting all the lamps to an uniform pressure, so that all the lamps, whether metered or unmetered, shall consume the same quantity of gas.

2. A complete change of the old iron burners of small capacity, burning at a high pressure, for very large steatite burners consuming at a very low pressure.

3. Great economy in the hours and mode of lighting, from the local authority employing its own lamp-lighters, contracting the hours of burning, and employing the lighting-rod and lantern, instead of the old-fashioned ladders.

A valuable report from the Public Lights and Gas Committee at Reading, appeared in the *Sanitary Reporter*, of the 4th December last, setting forth the entire working of the meter system in Reading since its adoption on the 21st of May last.

Although there are other towns in which the system has been nearly as successful as at Reading, we prefer quoting the Reading case, as the details are here all given by the local authority itself, and are free from any suspicion which might attach to the statements of a partisan.

The following tabular view, and the observations which follow, are copied from the *Sanitary Reporter*, and are strictly founded on the report of the Reading Public Lights and Gas Committee, which is there printed at length:

Period.	Hours from Sunset to Sunrise.	Quantity at 4 feet an hour.	Quantity at 5 feet an hour.	Qty to be paid for by meter indications.	Saving as compared with 4 ft. an hour.	Saving as compared with 5 ft. an hour.
	hrs. m.	c. ft.	c. ft.	c. ft.	c ft	c. ft.
21st May to 1st July..	313 40	1,255	1,568	940	315	628
Month of July.	246 48	987	1,234	243	744	991
" August.....	294 2	1,177	1,471	369	808	1,102
" September...	242 11	1,369	1,711	432	937	1,279
	1,197 00	4,788	5,984	1,984	2,804	4,000

Thus the saving by the meter system, as compared with 4 ft. an hour, has been 2,804 feet per lamp in 3⅛ months of the year, and the saving as compared with 5 ft. an hour is actually 4,000 feet per lamp.

The results of the meter system may be summed up under the following heads:—

1. The consumption by meter during 1,197 hours of darkness has been 1,984 feet per lamp, which is equal to 1.66 ft. an hour.

2. Calculated at the same rate for the whole year, the consumption would be under 7,000 ft. per annum, as against 17,232, the consumption at 4 ft. an hour, or against 21,540 ft., the consumption at 5 ft. an hour.

3. The lamps at Reading, in 3⅛ months, have actually burnt 882 hours, the number of dark hours between sunset and sunrise having been 1,197, the saving being chiefly due to the lighting and extinguishing being under the control of the local board.

4. The actual consumption of gas, as registered by the meters and agreed to by the company during these 882 hours, has been 1,984 cubic feet, or at the rate of 2¼ ft. an hour.

5. As the gas for public lamps is paid for at Reading by Act of Parliament at 3s. 7d. per 1,000 feet, the actual money saving on each lamp in gas alone will amount, according to the experience of the meters, to 36s. 8d. per annum when compared with 4 ft. an hour, and to 52s. 1d. per annum when compared with 5 ft. an hour throughout the year.

6. In addition to this great saving in the cost of the gas for public lighting, the Local Board at Reading saves at least 5s. per lamp per annum by employing their own lamp-lighters, instead of allowing this service to be done by the gas company.

What has been done at Reading may be done everywhere else, and it is only apathy or ignorance which prevents the same improvements being made in every town throughout Great Britain, not excepting the metropolis.—*London Artisan.*

THE AMERICAN GAS-LIGHT JOURNAL is published on the 1st and 15th of every month, and is the recognized official organ of

LIGHT, HEAT, WATER-SUPPLY AND SEWERAGE.

Its purpose is to ascertain and make known all new discoveries in the science and economical application of LIGHT, and promote thereby the interests of companies and consumers; to encourage and aid the introduction of PURE WATER from Lakes and Rivers into Towns and Cities, and to improve the system of SEWERAGE, VENTILATION, HEATING, and DRAINAGE everywhere.

THERE ARE 20,000 CITIES AND TOWNS IN THE UNITED STATES, CAPABLE OF SUPPORTING GAS-WORKS, WHILE THERE ARE NOT 400 GAS-WORKS IN OPERATION IN THE WHOLE COUNTRY!!!

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THE

AMERICAN GAS-LIGHT JOURNAL,

PUBLISHED ON 1ST AND 15TH OF EVERY MONTH.

C. ELTON BUCK, ... EDITOR.

TUESDAY, MARCH 15, 1864.

We have frequently referred to the small number of gas-works in the United States, when compared with such European countries as Great Britain, France, and Germany, and have urged this paucity upon the attention of gas-engineers. We are often asked the question—what is the smallest population in a town that will justify the erection of works? This interrogation is so often put, that it is evident there is much interest felt in the subject, and if that interest could be nurtured into something tangible, we should be called upon to chronicle the inauguration of many new works in places quite insignificant in point of population, yet, where a thriving and increasing sale of gas could be made.

The number of inhabitants a town boasts of, is not always a criterion whether gas-works would be profitable. There are certain villages we could name, where the population is large, but yet where it would be extremely uncertain if gas-works would pay. Some of the new towns in the Western States are laid out on scales of such magnificent distances, that to supply a dozen consumers, would require almost as much pipe as it would to furnish gas to an entire village built in a less scattered manner. These embryo cities, with streets from 100 to 150 feet wide, and every house surrounded by large plots of ground, would cause the item of mains to foot up to a very large sum, entirely out of proportion to the usual ratio between the materials required in constructing works. Towns in the older States, with the same population, would occupy perhaps but one third, or one fourth of the ground, and thus reduce the amount of mains required by a very large amount.

The position of a town considered with a view to obtaining the materials used in gas-making, has much to do with the question, whether it will pay to build gas-works. On lines of railroads or canals, or navigable rivers, where coal can be put at moderate expense, provided there be no objections of the character we have been considering, gas-works may be built with some expectation of their being remunerative. If a steady supply of coal or wood, —which ever material may be adopted—could be depended upon, so far as position is concerned, there can be very little risk to run in engaging to construct works.

But by far the most decisive means of arriving at this conclusion, is to ascertain the character of the expected consumers themselves, and the number that may be relied upon as actual consumers of gas. There are some villages of large size where little or no mercantile business or manufacturing is done, where the pursuits of the residents are chiefly agricultural, and where the people are all abed by nine o'clock in the evening, or thereabouts. Of course, no very extensive consumption of gas could be counted on from such customers. In other places a spirit of parsimony seems to pervade the whole community, and the few hours between sunset and bed-time are yawned out over miserable tallow dips, and not the slightest interest is felt in any public improvements. Gas-engineers will find no friends in places such as these. We regret to be compelled to say that such towns are more numerous than is desirable. Villages of this description, if peopled by a more enterprising class of beings, would soon emerge from their present obscurity, and be worthy of some other remembrance than being merely named upon a map, which, at present, seems to be the only use they are fit for.

Even though the number of inhabitants of a town be small, if it is the centre of a thriving business; if the people be possessed of some idea of liberality; if they be friendly to real progress, and ready to avail themselves of wise and judicious innovations, then the builder of gas-works may safely count upon a fair share of patronage, and may calculate—if other things appear favorable to the enterprise—that an economical outlay of capital will remunerate him for the risk.

Those of our readers who have constructed gas-works in small towns, could relate many amusing incidents concerning the impressions of some of the denizens of these places to whom gas was before unknown except by name. The absurdity of the questions asked, vividly recalls the days when MURDOCK was making his experiments, and WINSOR lecturing to the astonished public, repeating his wonderful predictions with all the gravity of a firm believer. The fears of the timid suggest the grave caution of Sir HUMPHREY DAVY and other well-known *savants* who raised their warning voices against the employment of so subtle and dangerous an agent as coal gas! These amusing incidents will recur to every gas-engineer, and although the people might by this time be expected to know something of the nature of gas, yet the questions which some of them put, and the remarks they make, betray an ignorance worthy of the last century.

In this country there are very few towns where the population is less than 3,000, which can boast of having gas-works. We have heard some engineers declare that towns less than these are not worth noticing, and yet we have known places where the population is certainly not over 2,000, where the small works pay regularly, and besides declaring a satisfactory dividend, annually lay by a small sum for a rainy day. We do not by any means say that all towns of this size would support gas-works, even if elligibly situated for the receipt of materials; but we think that by far too many small towns have been passed over as being too insignificant, which would have amply repaid for the investment. The experience of the small towns and villages in England, nearly all of which have their gas-works, proves that narrow as the field appears, there is room for business, and that if these small works will pay in England, they ought surely to be remunerative here.

In the present state of the market for all building materials, we cannot expect to see many new works built, but we hope when a more auspicious day shall arrive, that engineers will turn their attention to many of those towns which they have hitherto passed over. We desire to see gas-works spring up all over the country, and think that if properly managed, they could be made to pay in many places now deemed to be too small to support them.

PRICE OF COAL IN PITTSBURGH.

A meeting of coal merchants was recently held in Pittsburgh, Pa., which is thus referred to by a correspondent of the *Gazette* of that city:

"The principal object of the meeting appears to have been the reduction in the price of digging coal. Let us see if the merchants have any cause to complain. It is clear that every man should be able to live by his occupation. Mining on the Monongahela is one of the most uncertain occupations that men engage in. Take for example, the four coal works lying nearest to me, estimate the length of working time, from the first of July to the present—say eight months.

Roberts' Works run.....	40 days.
Farrow & Co....	40 "
J. N. & W. O'Neal	40 "
O. P. Berry	70 "

—making an average of less than fifty working days in eight months. The average amount mined by each man, is—say 100 bushels per day—more falling below than exceeding that amount. At this rate the average wages would not exceed $400 per year.

"The coal merchants allege that they cannot pay the present price of digging (five cents.) Let us see how this stands. In 1860 the price of mining was two cents, and loading four cents. After the war began, and prices raised, mining went up also. The prices of mining, as compared with loading, up to the present time, ran thus:

"Mining, 2 cents.....	Loading, 4 cents.
" 3 "	" 6 "
" 4 "	" 8 "
" 5 "	" 10 "

—showing that in every instance when mining raised *one* cent, loading advanced *two* cents—the merchants reaping increased profits at every advance of mining. At the present price of loading (ten cents) a coal works will clear from $100 to $200 per day in loading alone.

"Those merchants who 'run' their coal to the lower markets can stand the prices of digging, since they clear from $3,000 to $4,000 on each pair of boats. There is not much prospect of any of them quitting the business.

"The merchants agree that the price of out-door labor has increased, and that it costs more to load coal now than formerly. This is true; but they forget to state that the price of nut coal and slack has so far advanced that it nearly pays for the out-door labor—and that the mining of this *does not cost them one cent.*

"The conclusion of the whole matter is, that the coal merchants are trying to throw all the blame of high prices on the miners, while the fact is they reap all the profits—the men who do the labor simply making a living, while the merchants are now reaping the largest profits ever known to the trade."

SITUATION WANTED.—We call the attention of officers of gas companies to the advertisement in another column of a book-keeper who wants a situation. The applicant has had a long experience as an accountant, and can produce satisfactory testimonials.

ROBBINS' PATENT JOINT.—As an evidence of the economy of Robbins' patent joint for gas and water mains, it is stated that for a six-inch pipe, but *two* pounds of lead are required. In joining pipes in the old way, *nine* pounds of lead is the amount used. With lead at the present war prices, this large saving is a very important item to gas and water companies.

ANSWERS TO CORRESPONDENTS.

C. P. S., of Pa.—*One ton of ordinary bituminous coal will measure 44.5 cubic feet.*

B. L. D., of Ohio.—*We shall have to import it for you, as we have not a copy on hand.*

G. B. N., of Me.—*The process is not a new one, having been in use for several years with varying results.*

J. H. W., of Conn.—*The order for the book went to England by the last steamer, and will be promptly filled.*

A. C. C., of Md.—*Your letter is very indefinite, and almost illegible. We can hardly decipher it.*

P. G. F., of Ky.—*A French cubic metre is equal to 1.30779 cubic yards, or 35.3104 cubic feet.*

PETROLEUM IN MICHIGAN.

A correspondent of the Detroit *Free Press* writes as follows from Albion, Michigan, concerning the discoveries of oil in that State:

The town of Albion is a pleasant little village of about 2,000 inhabitants, situated on the line of that prince of railroads, the Michigan Central, about ninety six miles west of Detroit. In the fanciful imaginations of some of its more sanguine citizens, an immense city, with palatial residences and marble blocks, is speedily to spring up through the lubricating influences of the recent oil discoveries. A thousand samples and more of the oil have already been sent to different parts of the country. The druggists here will certainly have to order a new supply of small bottles if further specimens are to be sent.

The Discoveries thus far Made.—As yet, the oil has not made its appearance, except in two different localities,—from the cellar of the store of Mr. George N. Cady, and from the cellar of the new store of the Williams Bros. The quantity yet discharged is comparatively insignificant, hardly exceeding one barrel per day. This, however, proves nothing for or against the existence of oil in quantities in this section. I am told by parties who have had large practical experience in matters of this kind, that a spring or well that discharges one gallon per day is sufficient encouragement to induce the investment of capital for further development.

Quality of the Oil.—The oil that has thus far made its appearance is of a light bluish color, and in quality seems to be equal to the best specimens yet discovered in Pennsylvania or Virginia, though differing in some respects from either. It burns readily with a beautiful clear flame, and is quite free from that unpleasant odor and smoke connected with the burning of petroleum. It may be that quite a new variety of oil has been discovered here. It was first noticed on the edge of the river (Kalamazoo) that flows through the lower portion of the town, and being traced to its source, was found to be discharging from a drain near the store-room of Mr. Cady. The discharge from the drain, for some reason or other, has ceased; but the quantity from the cellars mentioned continues unabated.

Geological Characteristics of the Country.—The intelligent readers of the *Free Press* know that the teachings of geology, or rather the dicta of geologists, are often at fault, and fact is worth a dozen theories. Yet there are certain indications through which the finger of geological science points with tolerable accuracy. If there is any reliance to be placed upon the teachings of this somewhat uncertain science, we are inclined to doubt the existence of petroleum in this section in any considerable paying quantities. We doubt whether a single geologist in the country would have looked just here for the existence of oil-bearing rock. Yet we must remember that Prof. Douglas told of the existence of salt basins in this State, and for twenty years the matter was allowed to sleep, among the incredulous, as altogether unworthy of investigation. The oil-bearing rocks of Pennsylvania and West Virginia are not known to exist here. There are no evidences of volcanic action in this vicinity. Coal and peat beds, acted upon by the great internal fires of the earth in the production of petroleum, are not found here. There are no evidences of great convulsions of nature here. She has evidently drifted along in the even tenor of her way, in the formation of this portion of our State.

There are no jagged rocks, crisped and charred specimens of quartz, huge hillsides, or anything to indicate a sudden or very great disturbance of nature's forces in the interior of the earth. While the great interior forces of the earth, through volcanic agency, cast up the two great chains of mountains running nearly parallel along the eastern and western portions of this continent, carrying with them specimens of gold and silver and other metal, and opening fissures and seams through which could pass the product of the coal and peat beds of the interior in the form of petroleum, these forces of nature seem to have remained here inactive. An oil basin may exist here, but the sand foundation and the space succeeding must first be penetrated before it will be found to any extent. This latter the State geologist has, I believe, indicated, would be found to contain a thickness of some 500 feet, though it is known to outcrop at Marengo, six miles west of Albion. It is for the enterprising capitalist to here demonstrate, as he has before done, that geology is at fault. In the existence of the oil-springs already discovered, it would seem he has sufficient data to work upon.

A Summing Up.—Oil has made its appearance here, in two different localities. It is a good quality of oil, as has been fully tested by application. It burns in the ordinary Kerosene lamp, with a beautiful clear flame. Is it the result of leakage from cellars where petroleum has been kept? Has it been "salted" by decoy capitalists, to use a miner's expression? Neither of these hypotheses your correspondent is inclined to adopt. He has seen, examined, and received into his olfactories the odor of the new substance, and is satisfied the oil is here. Whether any considerable quantity can be called up from the great subterranean reservoir, or whether such a basin exists, he does not assume to affirm or deny; but, in conclusion, I repeat what I before stated, the matter is worthy of prompt and thorough investigation by the enterprising capitalists of our own State, as well as by those from abroad.

R.

WATER AND GAS.

If the statistics of all the articles consumed in a great city could be accurately ascertained, the results would be astonishing to every reflecting mind. What we eat, drink, and wear, make heavy demands upon moderate incomes, and there are many other things necessary for our bodily comfort, which are considered to be necessaries of life. If we take the articles used for lighting and heating our places of abode into consideration, we add heavily to the annual cost of living. There are many persons who will be startled when they are told the amount of water used in Philadelphia last year, estimating our population at six hundred and fifty thousand persons, averaged over fourteen thousand six hundred and ten gallons for every man, woman, and child, in the city. Such would be the average if the whole population were supplied by the works owned by the city. But we must remember that Germantown has its water-works, and in the rural districts water is furnished from wells and other sources of supply. We cannot estimate the population thus served, but the fact that the city works do not furnish all the water that is used in Philadelphia, must make the average to each consumer in the districts governed by the water department much heavier than the figures which we have mentioned.

We draw these deductions from the report of the Water Department for 1863, which states that the amount of water pumped into our reservoirs during the year was nine thousand four hundred and nine-eight millions seven hundred and seventy-five thousand one hundred and forty-one gallons. The immense quantity of water was furnished at a very low rate. The city received for the valuable fluid five hundred and sixty-eight thousand seven hundred and forty dollars and sixty cents, which is at the rate of one cent for one hundred and sixty-seven gallons. This is decidedly cheap; and if the truth were that every person used the average amount which the figures would imply, we would be sluiced in water, and our streets would be canals. But our manufactories use the greater proportion of this valuable fluid, and large quantities of it are evaporated into steam, which possesses the power of performing the work which would require the strength of millions of horses. We doubt whether any city in the world uses as much water as Philadelphia in comparison to its population. Our immense manufacturing facilities, and the great number of steam-engines which are employed in laboring for us, require vast quantities of the fluid, and luckily we have it in such abundance, that we have never yet known the want of it even in the hottest days of summer, which make extensive drains upon the basins.

Our artificial light must cost an immense sum of money every year. We cannot have any statistics of the consumption of those fluids and substances which are used for illumination—such as whale-oil, lard-oil, coal-oil, in its various shapes of manufacture, camphene, and candles. The trustees of the gas-works, under the city management, return that they manufactured last year seven hundred and thirty-five millions six hundred and ninety-eight thousand cubic feet of gas, which, at the customary rate last year of two dollars and five cents per thousand—the discount of one ninth being taken off—would have yielded one million four hundred and eight thousand and one hundred and eighty dollars and ninety cents. But the public lamps are comprised in this aggregate, and they do not pay as much as private consumers. The Northern Liberties and Kensington Gas-Works also must have added considerably to the total production of gas, making the entire amount of this vapor manufactured in this city last year very nearly one thousand millions of cubic feet.

By the city works, the number of burners supplied was five hundred and fifty-seven thousand nine hundred and seventy, so that the average consumption of each burner is not more than thirteen hundred and thirty-nine feet in a year. The customary consumption of a burner is rated at four feet an hour, so that the Philadelphia Gas-Works must have furnished light during one hundred and eighty-three millions six hundred and seventy-four thousand and five hours. Forty-six thousand five hundred and twenty-eight customers used the lights furnished by the city works, and the average of each consumer would be very considerable. The gas-report would be more valuable if it contained some very necessary statements which would show the necessity of the recent increase in the price of that article. But, except the information that the price of bituminous coal and the wages of laborers are increased, and an assertion that a change of the rates charged to consumers is absolutely necessary, we are left in a state of darkness which, upon a subject upon which there should be a brilliant illumination, is profoundly mysterious.—*Philadelphia Inquirer.*

PHILADELPHIA, PA.—H. P. M. Birkinbine, Esq., has been appointed Chief Engineer of the Philadelphia Water-Works, in place of Isaac S. Cassin, Esq. Mr. Birkinbine has occupied this important position before, and managed the trust committed to his care with signal ability, but about a year ago, he was displaced from his office, for political reasons only, and was succeeded by Mr. Cassin. Another change in the political complexion of the City Councils of Philadelphia having taken place, Mr. Cassin has been compelled to give way in his turn. We congratulate the authorities on having again secured the services of so efficient an engineer as Mr. Birbinbine.

INSPECTORSHIP OF GAS-METERS.—It is the universal desire of gas-engineers throughout this State to have Geo. H. Kitchen, Esq., re-appointed to the office of inspector of gas-meters. We have not heard a single dissenting voice on this question, and we again urge the attention of Governor Seymour to this important office. An incompetent inspector might do a deal of harm, while an official respected by the gas companies, meter manufacturers, and consumers, can but give satisfaction in the performance of his duties. We hear that there are many hungry politicians anxious to have the position, but we trust that the good sense of the Governor will appreciate the fact, that an office of this nature should be kept entirely apart politics.

LONDON GAS-METER CO.—The prospectus of this company, with a capital of £100,000 in 10,000 shares of £10 each, has just been published. The company propose to purchase the business of Messrs. Bischoff, Brown & Co., a well-known house in the meter business.

MEMPHIS, TENN.—The price of gas now charged at Memphis is $5 per thousand cubic feet, with 10 per cent. discount on all bills paid within five days after the presentation of the bill. If not paid within ten days, the flow of gas is stopped.

GAS COURTESIES.—The workmen of the Chartered Gas Company, Westminster, London, have presented their late superintendent, Mr. Evans, with a silver flower-stand on his retirement from his office. There were 497 workmen at the presentation.

GAS IN GERMANY.—At Graudenz, the municipal authorities have approved the emission of 85,000 thalers for the construction of gas-works.

At Friedburg, gas-works have been constructed by Mr. Hendricks. They were completed in the latter part of November.

WATER WORKS OF AMERICA.

DETROIT, MICH.

Water Commissioners' Annual Report.

OFFICE OF WATER WORKS,
Detroit, January 25, 1864.

To the Hon. the Common Council of the City of Detroit:

In conformity with the requirements of law "the Board of Water Commissioners" present their Annual Report for the year ending December 31, 1863, with the accompanying reports of the officers of the Board, to which reference is here had:

FINANCIAL.

By the Secretary's Report it will appear that the cash on hand Jan. 1, 1863, was	$34,347 44	
And that there was received during the year for water rates	69,089 08	
From all other sources	5,777 40	
	$74,866 48	
		$109,213 92

DISBURSEMENTS.

For interest on loan	$45,613 88	
" operating expenses	16,076 19	
" construction	8,036 69	
" for balance due on new engine to Jackson & Wiley	11,977 81	
Cash on hand Jan. 1, 1864	26,611 35	
		$109,213 92

It will be remembered the Board were authorized to borrow $750,000, of which amount they have negotiated $650,000, and have expended $639,753 89 in the construction and enlargement of the works.

Pipe Extension.

It will appear by the report of the Superintendent of extension and repairs, that during the past year there have been laid 2,041 feet of iron and 11,751 feet of wood pipe, making a total of two miles 3,232 feet, which, being added to the pipes previously in use, makes seventy miles twelve hundred and forty-seven feet. Pipes will be extended from time to time as the public require, and the revenue to be derived from the same will warrant the expenditure. The extension of the main from Woodward avenue to Cass avenue for the better supply of the city, is in contemplation, and will be accomplished as soon as the finances of the board and the price of material and labor will justify so heavy an expenditure.

Supply of Water.

The report of the Engineer shows that during the year past there were distributed 1,035,798,043 gallons of water, being an increase of the quantity distributed in 1862, of 40,852,714 gallons.

For a full statement of the average daily running time of engine, the quantity of water pumped annually, the average number of gallons delivered daily, with the amount and cost of fuel consumed from 1853 to 1863 inclusive, and for other valuable information, reference is had to two tables which are appended to the Secretary's report, and prepared by that officer with great care. In view of the increased cost of labor and fuel, the tables referred to present a gratifying result for the year 1863.

New Engine.

The new engine furnished by Jackson & Wiley, with the alterations and improvements subsequently made, was brought into successful operation in December last, at a cost of $26,513 87, which covers the entire expenditure for the construction, alterations and improvements. The success of this engine and pump is creditable to the ability and energy of Mr. John E. Edwards, the engineer of the works, who designed and superintended its construction. It is in all respects as perfect in its working, and fully as economical and nearly double the capacity of the old engine. This engine reflects much credit on the engineer, Mr. Edwards, and entitles him to take high rank among practical engineers. It is gratifying to the board to state that the works now have two good working engines, perfect in all their parts, which will ensure at all times a full supply of water to the city for all purposes.

Miscellaneous.

The addition of 15 per cent. to the rates of 1863, was deemed necessary in view of the increased cost of labor, fuel and materials.

In reference to the suit pending in New York against the sureties of Dickerson and Sickles, we have to state, that the board has made all preparations for trial; but the cause was postponed at last term, by the defendants, but intelligence has just reached us that the cause will probably be tried in the course of next month. If not, however, we cannot doubt it will be brought to trial in June next.

We propose to set apart $3,000 this year as the basis of a sinking fund to provide for the extinguishment of the debt. This fund, we hope, will be increased from time to time by the proceeds of the sale of the city lots belonging to the board, and by annually adding thereto any surplus revenue there may be.

E. A. BRUSH,
A. D. FRASER,
J. D. MORTON,
W. R. NOYES,
S. G. WIGHT,
} *Commissioners.*

Annual Report of the Secretary, for the year ending December 31, 1863.

OFFICE OF WATER WORKS,
Detroit, January 23, 1864.

To the Board of Water Commissioners of the City of Detroit:

Gentlemen,—In compliance with your instructions, I respectfully submit my annual report, touching the various subjects belonging to my department for the past year.

Finance.

The whole amount of cash received in the office, during the past year, is seventy-four thousand eight hundred and sixty-six dollars and forty-eight cents.

The number of families rated for water on the 1st of July last, was 7,699, and the number not rated was 1,689, making the whole number of families in the city, 9,388.

The amount received for water rates is sixty-nine thousand eighty-nine dollars and eight cents, being an increase of eleven thousand four hundred and thirty-three dollars and twenty-six cents over the amount received the previous year; of this increase, four thousand three hundred and thirty dollars and thirty-nine cents is due to the fifteen per cent. added to the assessed rates by the board, to meet the increased cost of maintenance in consequence of the unprecedented high prices of everything required to be purchased, and seven thousand one hundred and two dollars and eighty-seven cents to ordinary increase.

The whole amount of expenditures by the board during the past year was eighty-two thousand six hundred and two dollars and fifty-seven cents; of which twenty thousand and fourteen dollars and fifty cents was for construction, including balance on new engine; fourteen thousand nine hundred and eighteen dollars and ninety-five cents was for expenses and repairs; forty-five thousand six hundred and thirteen dollars and eighty-eight cents was for interest on the loans, and two thousand and fifty-five dollars and twenty-four cents was for collecting water rates, for service-cocks, &c. For details of receipts and expenditures, see Appendix A.

The balance cash on hand January 1, 1864, is twenty-six thousand six hundred and eleven dollars and thirty-five cents.

The receipts from ordinary sources, and the current expenses for maintenance of the works, the past year, shows the following:

Received from water rates		$69,089 08
Paid for interest, less amount received	$44,611 21	
Paid for current expenses, less am't rec'd to credit of same.	13,690 40	
	58,301 61	
Surplus		$10,787 47

From 1854 until 1862, while large sums were being expended for construction, accumulating the amount of interest to be paid, the receipts fell short of meeting the annual current expenses for maintenance, but, as was anticipated, the rates from increased uses of water for the past two years, have considerably exceeded the cost of maintenance.

The receipts and expenditures, both for construction and current expenses, considerably exceeded the estimate submitted in my last annual report, and the balance of cash on hand exceeds the estimate $2,341 91, which would have been about that amount below the estimate, but for the fifteen per cent. the board deemed it proper to add to the usual rates to meet the sudden and unprecedented advance in the prices of labor, fuel, and materials of all kinds required in maintaining the works.

The whole amount of interest received for the money obtained by loans, during the period of its disbursement in constructing the works, is sixty-two thousand one hundred and ninety-seven dollars and seventeen cents.

The whole cost of the main and distributing pipes, laid by the board, is $389,885 41, and of the other branches of construction—reservoirs, engines, engine house, fire hydrants, &c.—is $268,477 24; total, $658,362 65; less $18,606 75 credits to same; leaving the net cost for reconstructing and enlarging the works, $639,755 89.

The whole amount of cash receipts of the board since their organization, by loan and otherwise, is one million two hundred and forty-one thousand seven hundred and twenty-six dollars and seventy-four cents, and the disbursements for the same time amount to the sum of one million two hundred and fourteen thousand six hundred and thirty-one dollars and thirty-five cents.

The recent completion of the new pumping engine completes the original projected work of reconstructing and enlarging the works commenced in 1853, and the entire net expenditure has been for construction.....$639,755 89
And there remains cash on hand..... 26,611 35

$666,367 24

The whole amount of liabilities is..... 650,000 00

Showing that the sum of.....$16,367 24 has been received from ordinary resources over and above defraying the current expenses, and that of the amount borrowed for reconstructing the works, there remains unexpended, $10,244 11 in cash, to which add the value of materials, pipes, &c., on hand, about $10,000 00, and there remains about $20,000 of the loan yet to be used in further extending the works.

During the year, 285 permits were issued to families to procure water on the orders of the director of the poor, as follows:—212 for the period of three months, 72 for the period of six months, and one for the period of nine months, amounting to $528 06, which amount is due from the city.

The entire expenditure at the pumping works for labor, materials, fuel consumed, &c., the past year, was $8,857 67, and there was delivered 1,159 gallons of water for each one cent expended.

The net amount of expenditures the past year for maintenance of the works, including interest, was $58,301 61, or 5 63–100 cents for each 1,000 gallons of water delivered, and the receipts for water was $69,089 08, or 6 67–100 cents for each 1,000 gallons; receipts over expenses for each 1,000 gallons, 1 04–100 cents.

New Engine.

Contrary to expectations when the last annual report was submitted, there has been much vexatious delay in bringing the new engine—which it was supposed at that time was nearly completed—into service. The contractors, Messrs. Jackson & Wiley, did not tender it for trial and acceptance until the tenth of June last, when the engineer of the works declined to receive and accept it, and reported his objections, when a compromise was effected with the contractors by which they were to make certain changes in the working parts of the engine, and cancel all subsequent agreements for certain fixtures to the pump, and the board would receive the engine and assume to complete the pump. The engineer, Mr. John E. Edwards, who designed the engine and pump, submitted a proposition to the effect, that, if allowed, he would undertake to make the pump perform with entire satisfaction, and in the event of failure to do so, he would assume to pay all the expense incurred. This proposition was accepted, and he was authorized to have the necessary work done to perfect the pump. He succeeded in completing it and bringing the engine and pump into service and successful operation about the first of December last. The completion and bringing into service of this engine, relieves the board and its officers of the great anxiety and uneasiness for a long time experienced by them, in consequence of their being but one engine in service, on the continuance of which, in good working order, depended the entire supply of water to the city.

The entire cost of the new engine is $26,513 87, which includes all expenditures for connections, &c.,

and the extra expense incurred in securing the working of the valves to the pump, which was less than $700.

Waste of Water.

The rates charged for water is one cent per barrel, and could this sum be realized for all that was required to be pumped to furnish an adequate supply—which during the year just closed, amounted to 32,368,688 barrels—the revenue from rates would be $323,686 88; whereas, at the above rates payment was only received for 6,968,908 barrels, or, in other words, four and two-thirds barrels were required to be pumped to furnish one barrel consumed and paid for. The quantity distributed is about one and a half barrels of water per day to each man, woman, and child in the city.

The continued increase of the quantity of water required to be pumped to furnish the requsite supply, renders an investigation into the causes imperative, for the consumption at some seasons of the year nearly equals the capacity of the works to supply, and at the present ratio of increase will soon exceed it. In the month of July last, the daily average quantity pumped was 3,120,725 gallons, and the average daily running time of the engine was 16 hours and 17 minutes. Within the past two years the quantity of water distributed has increased 140,568,620 gallons, increasing the daily average running time of the engine one hour and thirteen minutes, one hundred million gallons of which may fairly be attributed to increased waste. This enormous increase must be attributed to one, or both, of two causes—wanton waste or dilapidated condition of the works.

In many instances there are reckless uses of water, and many on whose premises they occur, are not aware of the quantity used; whenever these come to the knowledge of the board, measures are promptly taken to correct the abuse, but doubtless there are numbers that escape the vigilance of employees.

There are numerous fixtures arranged for flushing drains and vaults, through which more water is discharged in a week, and in some cases in a day, than is required for all legitimate purposes on the respective premises for a whole year. Such fixtures and uses of water should be prohibited, as unnecessary and useless, unless meters are affixed by the owners to such pipes to register the quantity discharged, or payment is made for the whole quantity of water the pipes are capable of discharging by a continuous run. These fixtures are attached, no doubt, with an honesty of purpose, that they shall be used only when occasion actually requires; but the care and use of them are entrusted to those who feel no moral responsibily, or are not aware of the quantity and value of the water discharged in a given time, and the stream is allowed to run continually as the surest way to accomplish the service required. The full capacity of a one-inch pipe, under ordinary head, will discharge one hundred gallons (three barrels) in one minute and a half, or four thousand gallons per hour. If those requiring water for the purposes indicated would provide reservoirs that will contain ten or fifteen barrels of water, with a large gate through which this quantity could be suddenly discharged, it would perform the service required more effectually than the continuous flow of a small stream.

A great source of waste is occasioned by cheap and defective plumbing, done contrary to law, and in localities unknown to the board, by the use of hydrant faucets of poor material and workmanship, and the use of lead pipe too light for the service required in making connections, which are generally made without an air-pipe or chamber to receive the ram of the water in the pipe every time the hydrant is opened and closed. This constant ram, sooner or later, by constantly straining the weakest point, bursts the pipe, and when the bill for repairs is paid, the lesson is learned that the lowest price is not always the cheapest.

Water-takers, who should regard themselves as joint partners in the works, and personally interested in all that affects them—for the rates for water have to be graduated to meet the cost of furnishing it—should render all the aid conveniently in their power to prevent this wanton waste, and whenever such comes under their observation, communicate the facts to some one whose duty it is to correct the abuse.

Miscellaneous.

The total pipeage of the works is 70 miles 1,247 feet, which is a greater length of pipeage, according to the population they have to supply or cost of works, than any other water-works in the country has. Within the past four years nearly ten miles of pipes have been added to the lines, none of which exceed four inches interior diameter. The present supply mains—the area of all which do not equal the area of one pipe 18 inches diameter—are adequate to the demand upon them. The entire area of all the outlets south from the 24-inch main, extending from the reservoir to Woodward Avenue, is less than 38 square inches, or one pipe seven inches in diameter. The area of the main is 452 square inches, and when it is extended, as contemplated, to Cass Avenue, and connected by a 10-inch main with the 10-inch main in Michigan Avenue, the head of water will be increased from fifteen to twenty feet, and an ample supply of water furnished. The increasing demand, however, for water in the extreme western limits of the city, between the river and Michigan Avenue, will soon require that a large supply main be laid into that section.

The number of permits issued from the office to make connections with the distribution pipes the past year, was as follows: one-inch service cocks, 13; five-eighths of an inch service cocks, 143, and taps with wooden logs, 234—total, 390; being ninety-two more than there was the year previous, and a greater number than had been issued in any year since 1857, and most of which were for supplying water to premises not before supplied.

Both basins of the reservoir are in good condition, and no leak has ever been discovered in either of them since they were brought into use in 1859; neither basin have required any repairs during the past two years; no labor has been performed on the embankments the past year, except a few days of one man removing weeds. A few trees have been set on the surrounding ground, in the place of those that had decayed, which constitutes all that has been done at the reservoir and grounds.

The quantity of water daily consumed has more than trebled within the past ten years. Appendix B shows the quantity of water delivered, the amount expended in each department affecting the cost of delivering the same, and the cost of delivering 1 000 gallons each year since 1853, inclusive. Appendix C shows the daily average running time of engines, the whole quantity and the daily average quantity of water pumped, cords of wood consumed, number of gallons of water delivered for one cord of wood, and one cent cost of fuel each year, from 1853 to 1863 inclusive.

When the works were placed under the management of this board in 1852, an analysis of the Detroit River water—after passing through the pipes of the works—was made by Prof. S. H. Douglas in 1854. The inlet pipe to the pump —well then extended twenty-five feet beyond the line of wharves, not entirely freeing the water from shore impurities. The analysis then showed that the water delivered in iron pipes contained 5.7226 grains troy of compound ingredients in an American standard gallon (58,372 grains). Since that analysis was made, the inlet pipe to the pump has been extended into the river one hundred and fifty feet beyond the line of wharves, and beyond the influence of shore washings, into water thirty-four feet deep, with a current of three miles an hour. To ascertain the effect this had upon the purity of the water, I obtained from Prof. S. P. Duffield an analysis of the water, made by him since the pipe was so extended, a copy of which he kindly furnished me, and which he states is as critical as could have been made.

Analysis of Water taken from the Pipes in Communication with my Laboratory, Nov., 1862.

Specific Gravity 1002 Reaction—Neutral.

Chloride Potassium	.0002480
Chloride Sodium	.0006180
Chloride Magnesium	.0003166
Sulphate Lime	.0043400
Phosphate Alumina	.0000590
Alumina	.0010160
Carbonate Lime	.0028320
Carbonate Iron	.0008710
Silicic Acid	.0004500
Total solid matter in 100 grammes	.0107506

Total solid matter in one United States standard gallon equals .3010168 decimals of a gramme, or 4.6458 grains troy.

I think it is impossible to find a river water in world more free of *organic impurities*.

SAMUEL P. DUFFIELD, P. L. D.,
Analytical Chemist.

It is proper to state, that the water analyzed by Prof. Douglas was taken from an iron pipe at the residence of Mr. A. C. McGraw, on Jefferson Avenue, near the pumping works, and that analyzed by Prof. Duffield was taken from an iron pipe at his laboratory, on the corner of Clifford and Henry streets, after passing through several miles of pipes. A comparison of the analysis of water now furnished through the new inlet pipe, shows that it contains one grain .0768 decimals of a grain less of solid matter in one United States standard gallon than the water did furnish through the old inlet pipe, as follows:

Old Pipe—Solid matter in one U. S. gallon (58372 grains). 5 grains .7226 decimals.

New Pipe—Solid matter in one U. S. gallon (58372 grains). 4 grains .6458 decimals.

1 grain .0768 decimals.

Respectfully submitted,
ROBERT E. ROBERTS,
Secretary.

APPENDIX B.

The following table shows the annual expenses of furnishing the supply of water, including costs of repairing leaks, fuel, and expenditure at the engine-house for labor, repairs, &c., the quantity of water delivered, and the cost of one thousand gallons delivered each year from 1853 to 1863 inclusive In referring to which it is necessary to state that up to the last three months of 1858, water was pumped into the small iron tank, and that the daily consumption of the city was equal to from three to six times the capacity of the tank, and the engine was required to make five or six runs each day, to keep up a supply, and during the intervals fires were not allowed to go down. This mode of operating caused a large percentage of loss of fuel. In making comparisons or estimates, reference should also be had to the notes appended.

The causes producing the increased duty of the engine, is mostly due to providing greater storage capacity—permitting longer runs of the engines to be made—and to the charge made in Engine No. 2, which are best demonstrated in the succeeding table.

Year.	Am't expended for repairing leaks.	Am't expended at engine-house for labor, repairs, &c.	Am't expended for wood consumed.	Total.	Quantity of water delivered.—Gals.	Cost of delivering 1,000 gallons. Cents.
1853....	$1,346 41	$3,827 16	$2,129 27	$7,320 84	303,581,743	2 41–100
1854....	1,947 82	4,655 84	2,271 34	8,094 00	316,295,156	2 55–100
1855a...	1,993 18	5,147 40*	3,395 81	10,456 39	542,897,394	1 92–100
1856b...	8,826 52*	8,240 76*	3,890 45	20,957 73*	694,124,805	3 70–100
1857c...	3,249 76*	4,878 60	4,017 44	12,121 56	697,000,533	1 74–100
1858d...	1,970 62	4,144 12	3,993 30	9,779 94	718,091,207	1 36–100
1859e...	2,197 96	5,007 92*	3,802 20*	11,348 08	‡82,112,587	1 35–100
1860f...	1,969 42	3,940 52	4,196 21*	10,106 45	870,006,451	1 16–100
1861g...	2,969 86	5,238 88*	4,379 07*	11,687 76	895,129,923	1 31–100
1862h...	1,288 68	3,371 87	3,150 95	7,810 50	994,645,329	78–100
1863i...	1,447 13	4,436 11	4,621 56	10,504 80	1,095,795,043	1 01–100

*a** Boiler overhauld, tubes renewed, &c, this year.
*b** Street pipes frozen and bursted this year.
*c** Street pipes frozen and bursted this year.
*d** About one-fourth of water pumped into new reservoir this year.
*e** New cylinder for engine No. 1, paid for. About three-fourths of water pumped into new reservoir this year.
*f** Dickerson & Sickles' boilers which leaked bad, in use about ten weeks.
*g** Dickerson & Sickles' boilers in use two months. Extraordinary repairs on engine No. 2.
*h** No extraordinary repairs of engine or pipes; wood low price.
*i** Unprecedented advance in price of labor, fuel, and materials of all kinds. * 26-100 per cent. of cost of delivering 1,000 gallons of water due to increased expenditure.

APPENDIX C.

Yearly Summaries Engine-House Register.

Years.	H's. Ave. daily running time of engines. M's	Whole number of gallons of water pumped.	Ave. daily No. of gallons delivered.	Cords of wood consumed.	Cost of wood consumed.	No. of gallons of water delivered for one cord of wood consumed.	No. of gallons of water delivered for one cent cost of fuel.
1853.....	22	305,381,743	831,594	1128	$2,159 27	270,407	1426
1854.....	37	376,265,126	1,030,863	1331	2,271 84	282,693	1656
1855.....	55	542,807,364	1,487,143	1689	3,325 81	321,378	1632
1856.....	18	692,124,305	1,891,050	1869	4,017 44	366,366	1722
1857.....	27	691,090,525	1,900,837	1902	3,998 20	363,494	1745
1858.....	41	718,091,207	1,981,071	1815	3,665 20	395,642	1959[a]
1859.....	14	782,112,587	2,142,774	1875	3,902 20	418,158	2068[a]
1860.....	30	870,696,451	2,383,661	2267½[f]	4,196 21	383,698	2073
1861.....	40	895,195,423	2,452,409	2450[f]	4,379 07	365,399	2044
1862.....	38	904,945,829	2,795,877	1622	3,150 95	613,406[g]	3157
1863.....	51	1,085,798,013	2,887,803	1699	4,621 56	639,651	2241

Engineer's Report.

ENGINE-HOUSE DETROIT WATER-WORKS,
Detroit, December 31st, 1863.

To the Board of Water Commissioners:

Gentlemen,—I herewith submit to your consideration the following annual statement of operations at the engine-house. The present statement differs but little from former ones, except in the amount of water pumped, which increases from year to year, as will be seen from the following table, showing the number of gallons pumped in each month of the year 1863.

Table—Engine No. 2.

MONTHS	Time Run H's.	M.	No. of Revolutions.	No. of Gallons.	Cords of Wood used.	Cost of Fuel.
January ..	420	40	425,912	80,497,368	133	247 25
February ...	405	10	410,665	77,615,685	123½	229 47
March.....	444	15	449,477	84,951,153	148	408 50
April.....	422	40	432,284	81,701,676	133½	298 66
May	454	40	468,077	88,466,553	177½	441 23
June.....	468	40	480,199	90,757,611	181¼	454 94
July.....	504	30	511,865	96,742,485	195¼	462 92
August	494	15	499,079	94,325,031	192	440 33
September..	470		471,454	89,104,806	173½	388 83
October	463	40	466,586	88,175,304	185	434 12
November ..	432	45	436,410	82,481,490	152½	450 99
December ..	235	45	238,057	40,992,773	78¼	226 91
Do. ..	206	30	109,711	35,985,208	84¼	184 71†
Total...	5,423	50	5,399,720	1,035,798 043	1,946¼	4,670 86

Engine No. 2 has run 5,217 20-60 hours, average daily run 14 17-60 hours, making during the year 5,290,015 revolutions, delivering to the reservoir 999,812,835 United States gallons of water. This engine has done the duty of supplying the city with water continuously since June 1st, 1861, without any repairs, beyond the usual attention demanded by machinery of this class; which repairs have been made by the regular employees. This engine and the pump having been required to perform so long and continuous duty, now require some repairs, which can be made at a moderate expense, and hereafter the unemployed engine can be kept, in perfect order, and in readiness for instant use in case of any accident or necessary repairs to the other.

New Engine.

I am glad to be able to say to you, that the new engine and pump furnished by Jackson & Wiley, have been brought into use, and that the performance of each is satisfactory. The *pump valves* being of a different construction from those of No. 2 (see page 18, last year's report), work with much less noise and concussion, and can be worked without admitting air into the supply pipe, as is necessary in No. 2 pump. It is found, however, to be advisable, in order to secure ease in working, to admit a small quantity. The very little motion necessary in the working of the main pump valves, and the favorable arrangement for packing their seats, will, it is believed, save a large proportion of the expenses required by pump No. 2.

The new engine and pump have been brought into use at an unfavorable time to make a comparison of duty performed, the running ice collecting on the strainer of the inlet pipe, frequently requiring the speed of the engine to be reduced, or to stop it altogether—steam in the mean time blowing off to waste; and likewise it should be borne in mind, that the water was at or near the freezing point, and therefore more dense than in the warmer months of the year, and of course cannot be handled with the same ease and expense.

The diameter of pump No. 3 being the same as that of the main supply pipe leading to the reservoir, and the distance being nearly one and a half miles, will require engine No. 3 to be run at a lower rate of speed, to deliver the water economically, nine or ten revolutions per minute being about the average at which it has been run, has delivered more water than engine No. 2 running 17 revolutions, the average for the year. Opening the old ten-inch outlet, as a supply pipe last spring, at the suggestion of the committee on supply of water, relieves the engine of considerable duty in delivering water during the running hours and adds to the capability of delivering, yet it is not believed that water can be economically forced through the main, at a higher speed than is given by engine No. 2 running at an average of 17 revolutions a minute.

For the purpose of ascertaining the quantity of water *actually* delivered at each revolution, engine No. 3, on December 30th, pumped into the iron tank, and the result was as follows:

Capacity of iron tank.....385,560 gallons
Time of running.....1 hour 45 minutes
Revolutions of engine 1,175
Average revolutions per minute.....11 1–5
Measured capacity of pump.....356 gallons
Actual delivery.....328 gallons

Being 7–60 per cent, below the measured capacity.

For the sake of comparison the same facts are stated for engine No. 2.

Measured capacity.....211 1–2 gallons
Actually delivers 189 gallons, being 10–64 per cent. less than actual capacity.

There has been purchased during the past year 1,820½ cords wood, running measure, and 16,000 lbs. coal, costing, in all, $5 328 49.

There has been consumed 1,946¼ cords wood, running measure, and 12,600 lbs. coals at a cost of $4,623 63.

There has been used 3 bbls. of petroleum oil and 2½ bbls. of lard oil.

Log-Boring Shop.

During the year the engine has been run 35 days, and there have been bored, sawed, reamed and banded 2,231 wooden logs. Wood consumed by boring engine, 17 cords; oil used, 22 gallons. This machinery having been run some years, now requires some repairs before being brought into use next spring.

In view of the old engine known as No. 1 having been taken out and sold, I would suggest, for the sake of convenience, that the engine now known as No 2 be called the "old engine," and that the new one be called the "new engine." Respectfully submitted,

JOHN E. EDWARDS, *Engineer.*

Members of the Board of Water Commissioners, January 1, 1864.

EDMUND A. BRUSH, WILLIAM R. NOYES,
ALEXANDER D. FRASER, JULIUS D. MORTON,
STANLEY G. WIGHT.

Standing Committees.

Ways and Means, Coms. BRUSH and FRASER.
Extension and Repairs, Coms. NOYES and WIGHT.
Supply of Water, Coms. MORTON and WIGHT.
Claims, COMS IN ROTATION.

Officers.

EDMUND A. BRUSH, *President.*
BOBERT E. ROBERTS, *Secretary.*
BENJAMIN B. MOORE, *Superintendent of Extension and Repairs.*
JOHN E. EDWARDS, *Engineer.*
JACOB L. MUTH, *Reservoir Keeper.*
GEORGE KUNZE, *Receiving Clerk.*
JAMES FENTON, and C. B. MOSHER, *Collectors.*

[a*] About one-fourth of water was pumped into new reservoir this year, until then water was pumped into iron tank.
[b*] About three-fourths of water pumped into new reservoir.
[c*] D. & S. boilers, which leaked bad, in use about ten weeks.
[d*] D. & S. boilers in use two months. Engine No. 2, changed from high to low-pressure. June 1.
[e*] Engine No. 2, low-pressure, boilers in good condition.
[f*] Cost of wood materially increased.
† Engine No. 3, or new engine.

GAS IN ENGLAND.

The committee of the Devizes Gas-works are about to enlarge their means of gas production by an outlay of £2,000. This expenditure has, it is said, become absolutely necessary to enable them to meet the increased demand.....The Windsor Gas Company are reducing the price of their gas to 5s. 6d. per 1,000 cubic feet, being a reduction of 6d. per 1,000.....The Worcester New Gas-light Company have declared a dividend of 10 per cent. per annum, free of income-tax, for the past half-year. The last report of the gas inspector to the Local Board of Health states that in five experiments he found the average illuminating power of the gas to be 13 42, or 1.42 above the contract quality, which is 12 candles' illuminating power..... The Newcastle-under-Lyne Gas Company promise to reduce the price of their gas 6d. per 1,000 feet at the end of a year from the time when they took the concern into their own hands.....A bill, for the incorporation of a Company to supply Gosport, Alverstoke, and Rowner with gas, has just been printed. Clause 32 limits the price of the gas supplied to 4s. 6d per 1,000 cubic feet, including the supply and fixing of meters. Clause 37 provides that the gas shall be of such a quality as to produce from an argand burner having fifteen holes and a 7-inch chimney, and consuming 5 cubic feet of gas per hour, a light equal in intensity to that produced by 12 sperm candles of six in the pound, burning 120 grains per hour; and shall, as far as reasonably practicable, be free from sulphuretted hydrogen and other compounds deteriorating its purity.....The Collingham Gas Company (Newark) have declared a dividend of 6 per cent. The report stated that the consumption of gas has again increased considerably, and the works have been extended and improved without trenching on the reserved fund..... The Brecon Gas Company have declared a dividend at the rate of 10 per cent. per annum, besides "deficiencies" of former dividends for 1856, 1857, and 1858..... The Chester United Gas Company have declared their usual dividend of 7 per cent. on the preference stock and new shares, and a dividend of 10 per cent. on the ordinary stock; also the arrears of dividend of 1860, amounting to 33s. 4d. per cent.....The York Gas Company have declared a dividend of 10 per cent. per annum for the last half-year.....The Thorne Gas Company are said to be "in a flourishing condition; and the committee are enabled to declare a handsome dividend for the past year, besides reducing the price of gas 10d. per 1,000 feet, and also keeping a very respectable reserve fund."....The Tunbridge Gas Company have just declared a dividend of 7½ per cent.; the Bromyard Gas Company one of the same amount; and the Crowle Gas and Coke Company one of 10 per cent. The price of gas at Llangollen is 7s., and is much complained of, especially as coal is so near and so easily transportable, either by railway or canal. A contemporary thinks that "if more gas were consumed, it is probable that the company would lower their price;" but he does not seem to see that, if the company would lower their price, it is more than probable, not only that more gas would be consumed, but that larger profits would be reaped than now, on what was consumed; neither do the directors themselves appear to see it; yet the uniform experience of years has sufficiently established the truth of this principle in the sale of gas.....The New Romney gas management seems to be alive to it, having again lowered the price of their gas; and, under this management, they have raised their company from a bankrupt state to a state of prosperity, paid off old debts, and yet declare 5 per cent. dividend, where, a few years since, there was no such thing as a dividend at all.....The Bardfield Gas-Works in Essex are approaching completion. Messrs. Tice & Co., of London, gas engineers, are the contractors.....The Malvern Link Gas Company have declared a dividend of five per cent. per annum, free of income tax, for the last half-year, and laid aside a balance for their reserve fund. The company has only been two years in existence The number of private gas consumers is still on the increase.....The Cleethorpes Gas-Works are nearly completed. The gas will be charged at the rate of 5s. 10d. per 1,000 cubic feet.....The Westerham Gas Company have reduced their price from 7s. 6d. to 6s. 8d., and declared a dividend of £1 per share, free of income-tax.—*Lon. Builder.*

ROBBINS' PATENT GAS AND WATER JOINT.

THE PROPRIETORS of this unrivalled joint are now prepared to introduce it to general use, and to guarantee that, in all respects, it will fulfil perfectly all the requirements of either water, gas, or steam. It is a joint which remains in all situations absolutely tight.

The following illustrations, with the appended explanations, will give a good idea of the improvement:

Fig. 3.

Fig. 1.

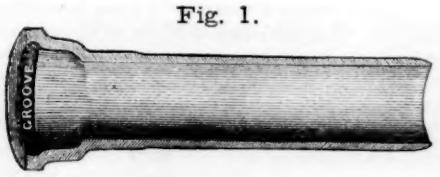

Fig. 2.

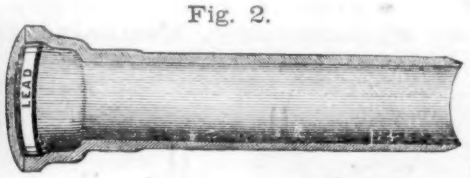

Fig. 4.

FIG. 1. Is a sectional view of a pipe showing a groove to receive a lead ring.

FIG. 2. Is a sectional view of a pipe showing a lead ring in the groove.

FIG. 3. Represents a former, which is used in the bell end of the pipe while casting the lead ring. Before using the former, however, a strip or belt of India rubber is first inserted in the socket, against which the former rests to prevent the lead escaping from the groove while being cast. Upon the cooling of the lead, the former and rubber ring are withdrawn from the socket, and the lead ring is left projecting inwards from the groove all around, forming an indestructible packing to receive the spigot-end of the pipe.

FIG. 4. Shows two pieces of pipe in connection with an hydraulic jack, by which the spigot-end of the pipe (which is cast tapering and may be cast in a chill), is forced into the lead ring in the groove which perfects the joint. A, represents the jack; B, B, the chains by which the pipes are drawn together; and C, C, pieces of pipe.

This ring joint packing may be cast at the foundry or any convenient place, and when delivered at the ditch, may be laid, and perfect joints formed, by any laborer, above or below the surface, or in ditches filled with water, there being *no joint ditching required*, and it can be laid with very great rapidity.

Among the economies realized by this joint may be enumerated, the saving in the weight of the pipe, in the amount of lead required to be used in forming the packing, in the labor of ditching, and in laying the pipe.

The bell or socket may be cast one-half the usual length, as the width of the groove requires, but from a half to one and a half inches, according to the size of the pipe, thus saving in the total weight about two hundred pounds per ton.

The weight of lead required to form this joint, as compared with the amount of lead used in forming a joint according to the old method, is fully seventy-five per cent. less, only so much being required as to maintain the compensating principle, or enough to allow (upon the raising or depressing of the line of pipe out of a direct line) what is lost upon one side of the ring packing, to take its place upon the other; thus securing flexibility of the joint without affecting its reliability. The use of yarn or hemp packing is dispensed with, the cost of which is an entire saving as compared with the old method of making joints.

The saving of labor in ditching is the total amount usually expended in digging joint-holes, there being *no joints to be caulked.*

The saving in labor in laying pipe furnished with this joint is a sum equal to the whole cost of carrying lead, fuel, ladles to the ditches, casting the lead, bailing out water, and the entire labor of caulking less only the sum charged for casting the lead ring packing at the foundry, which is comparatively trifling. This last-mentioned economy has been estimated by the best engineers at seventy-five per cent., or the same as the saving in the quantity of lead used.

The cost of pipe cast from our patterns is the same per ton as pipe cast for the old form of joint. The principal iron-founders propose to charge the same price.

We have submitted these joints in water-pipes to a pressure of two hundred and fifty pounds to the square inch, and they have remained perfectly tight. It has also been submitted for months in gas-pipes to the ordinary pressure of our city gas-mains, without any leakage whatever. We are aware that these statements may be deemed by many extravagant, but the merits of the improvement warrant them all, and the most skeptical may be fully convinced by an investigation of its value, and by witnessing the tests to which we submit it, or by its use under any conceivable circumstances.

TESTIMONIALS.

OFFICE OF THE WATER COMMISSIONERS,
CITY HALL, JERSEY CITY, October 14th, 1863.

Dear Sir,—On the 26th of May last, about two hundred and sixty feet of cast-iron water-pipes, six inches in diameter, with joints constructed according to your invention, were laid for the Jersey City Water-Works, in Prospect street.

The operation of uniting the joints of the pipes, was performed with remarkable facility, and with an important saving in time, materials, and labor. The joints proved perfectly water-tight, after turning the full head of water on the pipes.

In my opinion, your invention has proved entirely successful, and will be found highly beneficial to water companies.

Yours, respectfully,
ROBT. C. BACOT,
Superintendent and Engineer, Jersey City Water-Works.

MR. R. C. ROBBINS.

ENGINEER'S OFFICE, CROTON AQUEDUCT DEPARTMENT.

Dear Sir,—I have examined your plan for making joints in cast-iron water pipes, and have a report from one of my assistants, of certain experiments made by you, to prove the certainty and economy with which the joints can be made, and their stability when finished.

I think the experiments showed that the joints could be made quite as rapidly, if not more rapidly, than those made in the ordinary method now in use; the quantity of lead used was less than that required in the common joint, and no yarn packing was required. In these respects, your joint seems superior.

After the joints were made, a pressure of three hundred pounds to the square inch, was put upon the pipe in such a manner as to test the efficiency of the joint to prevent both leakage of water, and separation of the pipes from each other longitudinally. This pressure failed to produce either leakage at the joint, or separation, so long as the pipes lay in a direct line; but on deflecting them six and a half inches, in a length of twelve feet, the joint commenced leaking. It is fair to add, that this is a greater deflection than would often be found necessary in laying pipe.

I think the efficiency of the joint in both the points tested in this last experiment, might be increased by increasing the quantity of lead, both in thickness and width.

Altogether, the result of the experiments was such that I have determined to make a more thorough test of your invention by putting down about one thousand feet of pipe, when we commence our operations for the coming season.

The diameter of the pipe subjected to experiment, was six inches, and is the same size that I propose to put down next year.

I am, very respectfully, your obedient servant,
A. W. CRAVEN, Chief Engineer, &c.

To R. C. ROBBINS, Esq., Jersey City.

METROPOLITAN GAS-WORKS,
ENGINEER'S OFFICE, NEW YORK, October 9th, 1863.

Dear Sir,—The undersigned had the pleasure of being present at an experimental test of your patent joint for gas and water pipe, made at the yard of the Croton Aqueduct Department, and cheerfully testify to the results obtained, namely:

First experiment was made with two lengths of eight-inch pipe, jointed together, when a pressure of three hundred pounds to the square inch was applied. This pressure did not force the pipe apart, nor start the joints, but they remained, during this experiment, perfectly tight.

Second experiment was made by deflecting the pipe five inches, which is about equal to eighteen inches in one hundred feet, and the same pressure applied, which caused a small leak at the joints.

Third experiment was made by taking the pipes apart and rejointing them, when the same pressure was applied when lying straight and when deflected; at this experiment there was no leakage.

From these severe tests it is my impression that the superiority of your patent joint has been made manifest, and that it must eventually supersede the old way of jointing pipes together, saving both time and material.

Wishing you success in your enterprise,

I am, very respectfully, yours, &c.,
AMBROSE J. WHITE, Engineer.

To R. C. ROBBINS, Esq.

OFFICE OF THE METROPOLITAN GAS-LIGHT COMPANY,
NEW YORK, October 9th, 1863.

Dear Sir,—Having been present at the testing of your patent joint for gas and water pipe, at the yard of the Croton Aqueduct Department, I can testify to the results as stated by Col. A. J. White and fully concur with him in the opinion expressed in his letter to you of this date.

Very respectfully, yours,
W. TITUS, Secretary.

R. C. ROBBINS, Esq.

NEW YORK, October 23d, 1863

Gentlemen,—I am pleased to be able to inform you, that we are fully satisfied that we have done well in adopting your "Improved Joint" in the construction of an aqueduct which we are now building on Oil Creek, Northwestern Pennsylvania.

We have ten miles of three and four inch pipe to lay this season, and, in our estimation, the perfection of the joint, economy in lead, and rapidity with which the pipe can be laid, render it entirely preferable to any other method of laying pipe.

Our Mr. Hutchings advises us that he is putting down the three and four inch pipe at the rate of twenty-five to thirty lengths per hour, with two men in the trench. We are much pleased with this result.

Respectfully yours,
HUTCHINGS & FOSTER.

Messrs. R. C. ROBBINS & Co.

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AN INDESTRUCTIBLE COATING FOR

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It consists of seventy-two parts Oxide of Iron, and twenty-eight parts Cement Lime Stone in the one hundred pounds.

It has much more body than red or white lead. It is warranted perfectly water and fire-proof and to withstand a greater heat on metals, without scaling, than any other paint in use.

It is a perfect cover for all kinds of iron, tin, or wood-work, out-houses, and canvas coverings. It prevents and arrests the corrosion of metals, and is not affected by the action of salt, gases, acids or ammonia.

It hardens under water, as has been fully demonstrated by its application to gas-holders, by many of the largest gas companies in the United States; which companies having thoroughly tested its properties as herein claimed, pronounce in its favor over any other paints in the market, even though sold at double its price.

As a coating for patterns of iron or wood, when mixed with shellac, it is much superior to beeswax, oil, or shellac alone, as has been proven at the large founderies in the country.

For patching boilers and making joints, it is considered superior to red lead, or any other preparation.

For cleaning metals it takes the place of crocus, rouge, and emery, being better and cheaper.

This Paint requires no more oil than dry lead or zinc, and much less than the ordinary mineral paints. It is free from any waste, and possesses a spreading and covering power unequaled.

Terms, by the Barrel or Half Barrel, Four Cents per Pound.

A liberal discount made to parties purchasing by the ton.

A Barrel or Ton will be forwarded to any gas companies desirous of testing its qualities, for which there will be no charge if it does not give entire satisfaction as being the cheapest and most durable of all other Paints in the market.

Also, Prince's Imperial Black Paint, and Prince's Protoxide of Iron.

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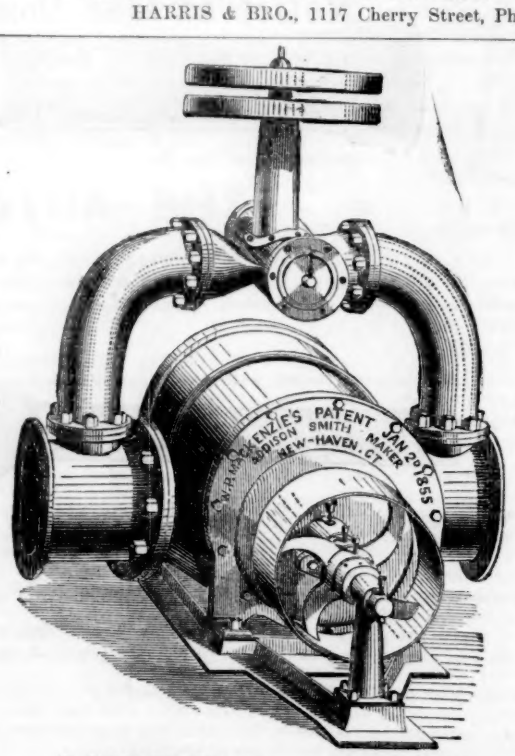

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They are made to pass from 4,000 to 150,000 cubic feet of gas per hour; will increase the production and illuminating power of the gas, and add very much to the durability of the retorts, either clay or iron. The Compensator obviates entirely the necessity of water-joints, is compact, durable, cleanly, not liable to get out of order, self-acting, quiet, and certain in its operation.

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The Blower is a Force Blast machine, durably built, and can be driven with one-third the power required to drive the ordinary Fan. The Cupolas are manufactured in sizes to melt from 1 ton to 20 tons per hour, will save one quarter of the time required by the old style Cupola, and 33 per cent. uel Address

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Apply at the Gas-Works of St. Nicholas Hotel, No. 63 Mercer st., N. Y., where one can be seen in operation; or address D. Parrish, Jr., St. Nicholas Hotel, New York city, or No. 1416 Arch street, Philadelphia.

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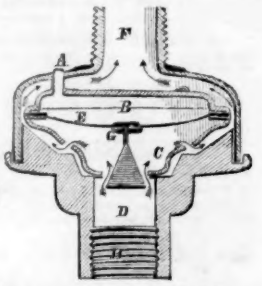

Notice to Gas Companies and Consumers of Gas generally.

WE RESPECTFULLY INVITE YOUR ATTENTION TO THE FOLLOWING TRUTHFUL DESCRIPTION OF THE construction and operation of this recent and most important invention; its application to every street lamp, and on the fixtures within the works of the Gas Companies, as well as for the use of the general consumer, will be found to effect perfectly and reliably, the object so long sought for, viz.: **a perfect control of the Gas under varying pressures, emitting the Gas at the burner without force, and without increase or diminution of quantity, and hence promoting the highest possible illuminating power of the Gas.**

THE AUTOMATIC GAS CONTROLLER

Is designed to occupy the place of the gas-burner. Within the circumference of a small cylinder, below the burner, is placed a conical valve, attached to a movable diaphragm, the valve and valve seat is proportioned, so that under a supply of Gas, varying in pressure from four-tenths to five inches, the burner will continue to produce the same consumption and development. The unerring accuracy of movement of the Diaphragm at every change of pressure, whether gradual or sudden, and its positive control of the valve which admits, by its proportionate increased or diminished aperture, the same unvarying amount of Gas, has elicited the unqualified approbation of engineers and other experts in the profession.

The simplicity of its construction, and materials used are a sure guarantee of its durability and continued successful operation. They afford to the consumer of Gas the advantage of a **superior light, with the greatest possible economy**; and for the Gas Company, they control the Street Lamps, affording a more satisfactory light for the public, without waste.

The public are invited to witness its operation, at the Office of the Company; and samples will be sent to Gas Companies for experiment, on application by letter or otherwise.

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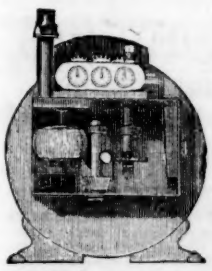

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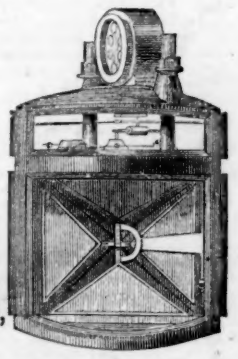

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Sewer Pipes extensively used in Brooklyn, and now introduced in New York, Jersey City, Newark, Hartford, Albany, and other localities, from 8 to 24 inches in calibre.
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